

**Issues of Gender in Technical  
Work**  
**With particular emphasis on the use of  
computers to work from home in Britain  
and the United States**

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90s: 88-060

October 1988

SSN<sup>o</sup> 2081-83

Presented at the '88 Tokyo Symposium on Women, August, 1988

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Management in the 1990s  
Sloan School of Management  
Massachusetts Institute of Technology

## **Management in the 1990s**

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For almost two decades, I have been involved in the study of high technology careers, which has culminated most recently in a project on the use of computers to work from home. Through all these years I have been interested in technically trained women as well as men - even though when I started, the population I was studying contained less than 1% women. Gender has not been the focus of these studies, but I would like now, in this paper, to take the opportunity to look back on this work from that particular point of view.

My original view of sex differences in relation to technology and technical occupations was quite simple. I assumed that women and men were equally capable of doing technical work, and that any differences in their careers had to do with differences in the general social roles they were expected to play. This view of gender, which still exists today, is what led to the concept of androgyny, and has been referred to as a beta bias (Hare-Mustin and Marecek, 1988) or a minimalist view (Wright, 1987) - a tendency to ignore or level out differences between men and women. Its original statement was probably best expressed by Alice Rossi, in her contribution to the 1963 Daedalus conference on the Woman in America, and my own contribution to that conference reflected the same point of view, though in a less pointed way.\* It was in great contrast, at that conference, to the views of two other participants - Erik Erikson and David Riesman - who argued that there were, in fact, basic gender differences between men and women that would naturally express themselves in the way a person relates to technology and to the requirements of high

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\*The Daedalus Conference was published first as the Spring 1964 issue of Daedalus, then republished in revised form in R.J. Lifton (ed.), The woman in America. Boston: Houghton-Mifflin, 1965. In the Fall 1987 issue of Daedalus, called "Learning about Women: Gender, Politics, and Power," Carl N. Degler, a participant in the 1963 conference, reflects back on it in his article "On Rereading 'The Woman in America'."

level occupations. No matter how much they argued that their theories were different from most psychoanalytic or functionalist theories of sex differences (and from the popular stereotypes of the day) because they valued positively the feminine characteristics they identified, these theorists provided an easy "explanation" for the fact that there were hardly any women engaged in science at that time, and even fewer in technology. Expressive and nurturant tendencies, even if not seen as signs of immaturity, could nonetheless easily account for women's lesser interest in the material world and their lesser ability to contribute to it.

The androgynous thrust was necessary at that time in order to counteract this view; without it, there would have been little hope that women would enter technical fields in significant numbers. Perhaps, this period in the US is equivalent to the stage of development in Japan today. But much has changed in the meantime, particularly in the area of theorizing about gender (cf. Eisenstein, 1984). Today, the view of Erikson and Riesman echoes throughout much of feminist scholarship. It is reflected in the "different voice" of women (Gilligan, 1982), in their emphasis on relationships and responsible care instead of on abstract principles and rights (Lyons, 1983), in their different relation to nature and hence to the work of science (Keller, 1986), and is explained variously by differences in hormonal and other biological conditions (Rossi, 1985), by different early relations to the primary care giver (Chodorow, 1978), or by differentiated socialization pressures and sex-role stereotypes in the society (Haas and Perrucci, 1984). This view of gender differences has been referred to as an alpha bias (Hare-Mustin and Marecek, 1988) - a maximist view: a sharpening or overemphasis of

basic distinctions between men and women that carry over into most aspects of behavior. It resides uncomfortably, at the present time, alongside the androgynous view.

How uncomfortable, how incompatible these two views are, I can demonstrate by a recent personal experience. I was invited to give a talk at an R&D lab near MIT. The invitation came from its women's network but the meeting was open to all and had been advertised generally. My talk related to the different ways that a matched group of male and female engineers experienced their technical careers. The top women scientists in the lab - highly competent and successful in their work - were horrified by my results; one, in fact, tried to stop me from talking and had to be led out of the meeting. Their position, more characteristic of women who actually do science than of those who study them, was vehemently opposed to any presumption of difference between them and their male colleagues, a position reinforced, I later discovered, by their fear that any hint of difference would be used by their management as an excuse not to hire more women. At that meeting I found myself face to face with my own previous views, and realized how my thinking on gender had changed.

So I come to the key question: how should one think about gender in relation to technology and the technical career? I would like to approach this question from the point of view of the work itself, and the women (and men) who pursue it. I thus finesse the issue of the essential truth about gender and try, rather, to come to a pragmatic view of the relation of individuality, social norms, and technology that gives free play to the diversity that men and women bring to work.

My own research had always shown differences between men and women, but they tended to be subtle. In the highly competent populations I studied, I more often found differences in variability and in

interrelationships, than in central tendencies. Occasionally there were such first order differences, and they highlight the variety of interpretations to which such findings are susceptible. For example, I studied two central R&D labs, both parts of large successful American corporations. One was small, with less than 50 technical professionals, whereas the other had almost 600. But the significant difference for the point at hand is that in the smaller lab almost 40% were women, whereas in the larger lab only 5% of the technical professionals were female. The point of the study was to ascertain the autonomy that these professionals felt they had in two dimensions: strategic autonomy, the extent to which they were able to determine their own research agenda; and operational autonomy, the extent to which they were allowed to proceed on their own, once a problem had been set for them (see Bailyn, 1985). There was no significant difference between men and women in the larger lab, if anything the women were slightly higher in autonomy. In the smaller lab, in contrast, there was a large difference, which showed that the women felt they had considerably less autonomy than did the men, even though they wanted it, more or less, to the same extent.\*

How can one explain this difference? My sense is that in the larger lab, the one with so few women, a number of dynamics were at work. First, these women are undoubtedly selected from the top extreme of the distribution of female technical ability and interest. As such, they are certainly as competent as their male colleagues, and may well be considerably better - thus justifying positions with greater autonomy. Second, because of their small number they probably have to be "more male

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\* Harlan and Weiss (1982), in their study of retail stores differing in the proportion of managers who are women, show that after the initial token stage, things at first get better for women as their numbers increase, but then begin to decline again as their proportion gets closer to the 50-50 mark, a similar result to what is seen here.

than the men" - adhering to a very androgynous view of gender, similar to the scientists who did not want to hear my results of differences. In the smaller lab, which employs a much larger proportion of women, these constraints were loosened and differences were allowed to emerge. But how is one to understand them? Why do the women in this lab have less autonomy? Every perspective on gender can provide an explanation. Perhaps it is because women show less inclination for science, or, to put the blame on the organization, because the lab discriminates against women. In either case, the explanation assumes that the female result represents a less desirable situation than that of the males. And that assumption is precisely the target of the most recent theorizing, which shifts the argument to the male construction of the entire enterprise of science and technology. From this more modern point of view, it is not the finding of women's difference that needs to be explained, but the question that was asked (Keller, 1987). Autonomy, it would be argued, is the issue only because autonomous males have defined it as the basis of creative science. But it may not be the typical way that women approach technical work.

It is this argument, or something similar to it, that I tried to make in explaining the difference between the matched group of men and women engineers which got me in such trouble when I tried to present my findings. For I had found (Bailyn, 1987) that though male and female engineers were equal in most aspects of their careers - in their positions and salaries, even in their orientations - their technical competence was experienced differently. For the men, an emphasis on technical competence went along with perceived success and self-confidence. Not so for the women, for whom self-confidence was negatively correlated with the reported importance of technical expertise to their work. In explaining

this difference I wanted to indicate that technical work could also proceed in different ways from those commonly advocated - by greater interdependence, less autonomy, and less reliance on individual expertise. But since this was not the way it has typically been conceived, such an idea made the established women uncomfortable. In that setting, where the androgynous view was dominant, this point was perceived as dangerous. And so, a potentially advantageous diversity was lost.

All of this is background to the story I want to tell about the use of computers to work from home. But it points to the way my views have changed over the past 25 years. I am now less sure that there are no occupationally relevant differences between men and women, but I am also willing to finesse this question and to concentrate on the variation in such characteristics among both women and men. I also deviate somewhat from much of feminist scholarship by being less concerned with the essential meaning of gender and more interested in the way gender relates to the evolution of occupational requirements and in gender as a cultural signal producing contrary interpretations of the same behavior. Thus, I approach gender from a maximist perspective when viewed as a cultural construction, but from a minimalist view when considering the psychology of technical work. In this latter respect, I stress the diversity within both sexes.

With this general introduction, I come to the main work that I want to report today - a study of the use of computers to work from home.

#### Working at Home with Computers<sup>\*</sup>

Employment at home with computers has been seen, on the one hand, as a solution to the problem of modern women trying to combine gainful work

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<sup>\*</sup>This work is part of a larger project done in collaboration with Dr. Constance Perin which was financed by the Management in the 1990s Program of the Sloan School of Management, MIT.



with family responsibilities, or, on the other hand, as a return to an electronic sweatshop which will lead to exploitation and increased gender stratification. What actually happens will depend, in part, on the level of work involved and on the mode of employment (cf. Olson and Primps, 1984; Leidner, 1988). I therefore want to start by defining the domain within which our work has proceeded.

First, we are dealing with people who use the technology for high level work - not the routine tasks of data entry or word processing - but those, like systems developers or financial analysts, whose work requires high level training and judgment, and discretion in its execution. This is an important distinction, often ignored in the discussion of this mode of work. Second, we deal with home-based organizational employees, and not the many independent professionals who have used computers to set up independent home businesses. Thus we deal with people who are subject to the rules of large organizations, and also enjoy their benefits. We do this because our interest is in the potentiality of information technology to change the organization of work within conventional bounds. Third, we focus on working from home that occurs during the regular work day. Many organizational employees do extra work at home - in the evening and on weekends - and many in fact are encouraged to do so. One American company, for example, arranged for discounts in the purchase of equipment for its employees, but made them sign a pledge that they would still spend 37 1/2 hours (full time) in the office. Our interest, rather, is in the substitution of home-based work for office work - not in any addition. Finally, the people we have studied do NOT spend all of their time at home. They may be home-based, but they are not home bound. On the contrary, they come into the office whenever necessary, and often go to client sites or congregate for face-to-face meetings. One company had an

ingenious device in its offices to accommodate them: a dedicated file case on wheels attachable to any desk, to which home-based employees could connect their private phones and computer lines whenever they came into the office.

The interesting aspect of this phenomenon is the intersection of gender and the cultural meaning of home as opposed to office. Thus working from home for women calls forth an entirely different set of dynamics than it does for men.\* Further, there is the overlay of national culture. The study I want to discuss is based on data collected in England, with comparisons with parallel data from the US. Surprisingly, despite the similarity of these two national cultures, we found a number of intriguing differences that relate to the issue of gender.

The study was done at ICL, the largest computer manufacturer in Britain, and deals with their Contract Programming Services (CPS) unit, which consists of a home-based workforce. CPS was started in 1969 in order to permit women with scarce computer skills to continue to serve the company part time, and to keep up their skills and their involvement with work, while at the same time raising a family. Initially these women worked for hourly wages with no employment benefits, and did mainly body-shop work, taking small programming jobs home to work on in isolation. Now, however, nearly two decades later, this part of the company has been turned into a business unit in its own right and is making a profit. It is managed by a full time home-based manager, has its

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\* Gender also intersects with the attitude toward technology. In one English office, for example, which had installed PCs for its middle managers, there was a reluctance to use the new equipment on the part of both men and women. The men resisted because they felt that typing was "women's work" and the women were concerned that working with machines was too masculine.

own career structure with both a management and a technical track, and is involved in a variety of projects developing systems for both internal and external applications. The work force is still paid by the hour (though this is not true of its managers) and many still work part time, but they are now eligible for all employee benefits and have the opportunity to rejoin, should they so choose, the regular ICL hierarchy. The unit employs approximately 180 people, of whom 8 are men. Out of this group, we targeted 55 people clearly in systems development who could be compared with 51 systems developers from the Group Information Systems (GIS) units of ICL, who are office-based. This latter group consists of both employees and contractors, but all are working at company office sites. In the spring of 1987, we sent people in both of these groups a detailed questionnaire, based on intensive pre-test interviews, which dealt with the way they do their work and the meaning that it has for them. The response rate was good: 89% of the home-based group; 78% of those who are office-based. It is the data from these 49 home-based and 40 office-based respondents that I want to discuss here.

To understand these data, it is important to remember that the groups differ in three key ways. The first is the employment relationship. The CPS group is home-based, works primarily part time, and is paid by the hour rather than being on salary. Second is gender. Only 4 respondents in the CPS sample are male; in the GIS (office-based) sample, only 25% are women. Finally, the distribution between managerial and technical roles is different: there are many more strictly technical employees in the home-based unit than in those who are office based. I refer to these dimensions because they had to be taken into account in the analysis.

Many interesting findings stem from this study. What I would like to emphasize here, though, are those that relate to the meaning of work.\* Through a factor analysis of a number of questions in the survey instrument (Table A1), based on the total sample, there emerged two different meaning clusters (Table A2). The first is centered on interesting work, significance of the task, keeping up skills, and the importance of family and flexibility. It is also defined by the LACK of concern with income and success, and the LOW importance attributed to leisure activities. The meaning of work embodied in this pattern consists of an intrinsic involvement in the actual tasks, in the context of family.

The second configuration, in contrast, is centered on work and career as a key aspect of one's life role, on the importance of status and prestige and of success as defined by promotion and pay, and is defined also by a LOW concern with family and flexibility and with keeping up one's skills. It embodies a meaning of work based on an instrumental involvement in the context of career.

Analysis of variance was performed on scores formed from these patterns, with gender, work role, and employment relation as the independent variables. The analysis shows significant main effects for both configurations of meaning, but the results are much more dramatic for the first pattern, where the multiple correlation coefficient is .65. Two of the independent variables account for this effect: employment relation and gender. CPS employees score much higher on this pattern than do the office-based systems developers ( $\beta=.40$ ), with the freelancers being lower than office-based ICL personnel. And women are higher than men ( $\beta=.32$ ), independent of employment relation and work role.

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\*The data on which these findings are based are presented in the Appendix to this paper.

For the second configuration, the overall main effects are significant ( $P=.037$ ), and the multiple correlation coefficient is .35. But no individual variable is independently significant. Gender is the most predictive ( $\beta=.30$ ), with men higher than women, followed by work role ( $\beta=.14$ ), with managerial employees higher than those who are technical. The large difference between ICL employees who are office-based (mean=+.42) and those who are home-based (mean=-.22), attenuates when gender and work role are controlled (Table A3).

By inspecting the means on scores from both of these meaning clusters, for groups defined by employment relation, work role, and gender, one sees that the CPS women are the embodiment of the first pattern. It is among the home-based ICL employees that one finds the meaning of work in its intrinsic character within the context of family. Thus, almost twenty years after its beginning, CPS still seems to reflect the values on which it was founded. The second pattern, in contrast, which represents a career-centered instrumental approach to work, is most typical of the men who are employed by ICL in standard office-based positions, particularly when they are in managerial roles.

It also becomes apparent that CPS men and GIS women deviate from the expected pattern of being high on one meaning cluster and low on the other. Disaggregation of these clusters into their components shows that these "deviant" groups combine elements of both patterns. In particular, office-based women share with their male colleagues the concern with money, but they do not give work such an important place in their lives. They are somewhat younger, more likely to be childless, and less experienced than are their male peers. Family seems to be a more critical concern for the freelance women; for those employed by ICL, it is the task itself that has greatest significance.

And the CPS men, though very few in number, point to a pattern that has been found also among US telecommuters. These men share with their female colleagues a non-instrumental orientation (they are relatively little concerned with money, status, or success), and are equally interested in keeping up their skills and in flexibility. But they do not have the same interest in the task itself as do the women similarly employed, and their emphasis is much more on leisure and considerably less on family. They tend to be single and are older and more experienced than their female colleagues. It is as if they use their skills to forge a leisure-oriented life style. They may represent the forerunner of an emergent pattern of work, based at home or in an office as the task demands, centered on the development of skills and on autonomy, and concerned less with career and advancement than with balance, leisure, and physical fitness.

These conclusions are buttressed by a final set of findings, which relates these meaning clusters to the satisfactions of people with various aspects of their lives (Table A4). Overall, scores on these meaning clusters are not correlated with each other, by definition. When the sample is disaggregated, this lack of correlation persists for the women and for those at CPS. In contrast, for the men at GIS, and mainly when technical, there is a fairly sizeable positive correlation. For these employees, the two patterns of meaning are by no means contradictory; rather they go together. Their opposite, most likely, is a form of alienation from work in general.

Overall, further, the scores on the first pattern correlate significantly with job satisfaction ( $r=.44$ ) and scores on both patterns are significantly correlated with a sense of achievement ( $r=.30$  and  $r=.27$ ). These correlations persist when the sample is disaggregated. In other

words, job and achievement are important and satisfactory whether one is involved with work through its intrinsic tasks in the context of family, or instrumentally in the context of career.

Beyond that, however, disaggregation points to clear differences between the two patterns of meaning. An intrinsic involvement with work is positively correlated with a number of other satisfactions: personal relations, balance between work and non-work, time for family, fun and pleasure in life. Not so for the instrumentally involved, where there is a NEGATIVE correlation with one's satisfactions with personal relations, time for family, and health/physical fitness.

These results from the English study, when combined with findings from research in the US, indicate that the CPS model represents what one might call a traditional home-based pattern (Figure 1). It is traditional because it is anchored in the traditional view that women's priorities center on their families and homes. As such, it may represent an example of mutual exploitation. The women involved, despite their level of skills, assess their situations as highly favorable when compared to not working at all, but admit that there are disadvantages in terms of position and pay when compared to working in the office-based mode:

I would not want to go back to a 9-5 job, yet I am aware that my salary is considerably lower than it would have been had I stayed on. I am properly paid for the tasks I am doing, but not for my experience and career stage...But of course that was my choice.

Nonetheless, they value this opportunity, and often choose to stay with the arrangement even when the primary motivating circumstances are no longer present.

But the same assumptions are no longer evident among women of comparable skills in the US, and hence it is not a pattern that is prevalent there. American women with equivalent skills tend to be much

more career oriented, and are not likely to want to give up the visibility that office presence provides. Thus, the fact that Britain has more successful examples of work forces that use computers to work partially from home than does the US, may depend on the more traditional sex-role expectations that are still prevalent there. The arrangement, therefore, may be seen as reinforcing the gender structure of society.\*

And yet, when compared with the GIS pattern, primarily among men, where work is viewed instrumentally in the context of career advancement up an organizational hierarchy (the modal office-based pattern of work), there are clear personal advantages in the home-based model. For the GIS pattern, which is the prevalent one in most industrial societies, is negatively associated with satisfactions of a personal nature. These results provide empirical corroboration of the personal costs associated with the way high level work is characteristically organized (Figure 2).

But if the modal CPS model is constrained by national differences in gender roles, the few men in CPS point to an emergent pattern that is also evident among high level telecommuters in the US (Figure 3). Here are people with scarce skills, hired for their innovative potential, for whom life style and balance are more important than the single-minded emphasis on career advancement. For them, location and timing of work are important to the extent that they allow them to meet their personal needs.

And here we face the paradox that this emergent pattern seems to be more available to men than to women, at least at the present time. For women, the association between traditional gender roles and home may be so close, that working at home is either rejected, as in the more ideologically androgynous US, or incorporated into a dominant family orientation, as

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\*Risman and Tomaskovic-Devey (1986) make a similar argument for the US, since the firms they surveyed view telecommuting in gender specific ways: either for female clerical workers or for male professionals.



is the case for the CPS workers in Britain.\* What seems to be happening, therefore, is that information technology, by freeing work from the constraints of location and time, is highlighting yet another important cultural construction, namely the distinction between work and home. Indeed, anthropologists concerned with American life (e.g. Perin, 1988; Collier, personal communication) depict this demarcation as the key cultural divide, which certainly reinforces, and may partially determine, the gender structure of American life.

Let us take a closer look at the intersection of these two cultural dimensions (Figure 4). Cells 1 and 4 represent the traditional association, in industrial society, between gender and sphere of activity and influence: women are associated with home, in a private domestic sphere, while men are associated with paid work, which exists in the public arena. But social change is beginning to loosen this association, at least in the western world. Values and views of life style are changing, which may loosen the gender divide. And the networking possibilities introduced by information technology have the potential of blurring the distinctions between spheres of activity. What seems particularly interesting is that the way these forces are working is different in Britain and the US, at least as reflected in the data on the use of computers to work from home.

In Britain, the gender divide seems to be staying firm, with the division by sphere giving way. So, women are introducing paid work into

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\* It is intriguing, for example, that the managers of CPS, all women who have moved up the home-based hierarchy, were somewhat suspicious of the motivations of the men who wanted to join the unit. Also, men and women seem to have different difficulties in setting up a work place at home. For the women, the problem centers on defining boundaries between home duties and employment duties. This is much easier for the men, whose main issue seems to be establishing the fact of their employment. One man left his house in the morning so that his neighbors would not think he had been made redundant.

the home arena, by merging cell 2 into cell 1, and are therefore able to be employed and to keep up and make use of their skills without having to reassess their primary priority on family. The traditional association between gender and sphere, therefore, is not brought into question by their work, which might explain why there are so few male CPS employees.

In the US, in contrast, there seemingly is a different dynamic. Here women, particularly those at the upper end of the educational and occupational scale, have moved forceably into cell 2, but have done so by blurring the distinction between male and female, and accepting work and career as a prime priority - often accompanied by a decision not to have children. Even more interesting is the beginning of a trend - at least in the US - for men to merge cell 4 into cell 3: both by working at home and by taking on some of the responsibilities of the home sphere. For it is the participation of men in the domestic sphere that anthropologists have identified as one of the key indicators of societies with the most egalitarian gender roles (Rosaldo, 1974).

I am not sure whether these differences represent a time lag, and that one can expect the British eventually to follow the American pattern, or whether they reflect fundamental distinctions in national culture. It is a question to which I have no answer, and, just as I decided not to focus on the meaning of gender, I would like also to by-pass this important point. Rather, my perspective is more pragmatic, and envisions a blurring of the distinctions in both of these cultural divides. Such a change should be possible, since the divisions are cultural and not biological. It would reduce gender identity to sexual identity, and thus base distinctions in roles on individual characteristics. And it would limit sphere of influence and power to the location of work, which would depend on specific occupational and task requirements. But to say that a change is

possible is not to say that it is easy. On the contrary: it would require a new view of managerial control, one that focuses on output rather than input; and it would mean an emphasis on diversity within each sex rather than on differences between them.

Regarding the latter, I have in mind a statistical model: yes, there may be systematic mean differences between men and women, but there is also enough variety within each group to provide significant overlap between them. What is critical, therefore, is to identify those attributes - which may well be correlated with a person's sex, at least at this point in historical time - that are really necessary (not only culturally defined) for technical work and to encourage people, of either sex, who have these characteristics to commit themselves to it.

As an example of what I have in mind, let me go back to the study I mentioned earlier where I found that the women engineers had less self-confidence and had a less integrated view of how technical work fitted into their lives. Though interesting, this difference needs to be pursued further by looking for particular orientations or ways of relating to work that account for it. An example comes to mind from a much older study, based on a male professional sample (Bailyn, 1977). There I found a similar difference between accommodative men - those for whom family concerns take priority over work issues (a small minority) - and non-accommodative men. If it were found that accommodation could account for the difference in experience between male and female engineers, one might be led to a very different understanding of the original finding. One would be forced to consider the relation of accommodation to the work place, rather than to continue focusing on sex differences. And thus one would be led to ask why technically trained employees, both men and women, with serious commitments to their private lives as well as to their work have difficulties with current organizational practice.

In summary, I envision an organizational world less characterized by a rigid gender divide, which would allow women and men to meet occupational requirements in as many different ways as their diversity permits. In such a world technology plays a key role by bridging the boundary between home and work, and thus allowing both men and women to participate in both spheres according to their individual predilections. Such a world is not without its costs. As expectations for behavior become less clearly specified, each person becomes more dependent on his or her own sense of identity, a condition that we know can be difficult and that can lead to alienation and a desire to "escape from freedom." But at least it would be a world where the costs, and benefits, are not gender specific, and thus can be shared more equitably.

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Appendix

Tables on the Meaning of Work

- Table A1. Items used in analysis of meaning of work.
- Table A2. Personal meaning of work (loadings on two emergent factors)
- Table A3. Mean factor scores.
- Table A4. Satisfactions related to factor scores.

Source: L. Bailyn. Toward the perfect workplace? The experience of home-based systems developers. Sloan School of Management Working Paper #1993-88, March 1988.

TABLE A1

Items Used in Analysis of Meaning of Work<sup>a</sup>

- A.<sup>b</sup> To help explain what working means to you, please assign a total of 100 points, in any combination you desire, to the following seven statements. The more a statement expresses your thinking, the more points you should assign to it. Please read all the statements before assigning points.
- working gives me status and prestige  
working provides me with an income that is needed [GIS]<sup>c</sup>  
working itself is basically interesting and satisfying to me  
[CPS; female]  
working allows me to keep up my skills [CPS; technical]
- B.<sup>d</sup> Please assign a total of 100 points to indicate how important the following areas are in your life at the present time. The more important a particular area is, the more points you should assign to it:
- my leisure (like hobbies, sports, recreation, and contacts with friends [GIS; male; technical])  
my work/career  
my family [female]
- C.<sup>e</sup> When you think of your working life, which of the following aspects of working seem most significant and important to you? Please rank the items from 1=most significant, to 6=least significant:
- the task I do while working [female]  
the money I receive from my work
- D.<sup>f</sup> How important is it to you that your work life contains the following? Please assign a number between 1 and 7 to each attribute, where 1=not at all important, and 7=extremely important.
- success: good opportunity for upgrading or promotion; good pay [GIS]  
flexibility: convenient work hours; convenient work location; flexible working arrangements (e.g. when and where to work) [CPS; female]
- E.<sup>g</sup> In general, how important and significant is working in your total life? (from 1=one of the least important things in my life, to 7=one of the most important things in my life)

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<sup>a</sup>Only those items that differentiated between the two emergent meaning factors are included in the table. The response categories are listed in the order in which they appeared on the questionnaire, categories that did not differentiate are briefly mentioned in the footnotes. I, and others, have used many similar items in previous research. Their present form, however, is based on I. Harpaz, The factorial structure of the meaning of working. Human Relations, 39, 1986, 595-614.



(Table A1 continued)

<sup>b</sup>Based on a question that fell into Harpaz's category of valued work outcomes. Based on pre-test interviews I added the item on skills to Harpaz's list, which also included that working keeps one occupied; permits one to have interesting contacts with other people; and is a useful way to serve society.

<sup>c</sup>Characteristics in brackets indicate those factors that were found to have statistically significant main effects on the item in question. The group that had the highest score on the item is given in the brackets. So, for example, in terms of income, employment relation had a significant main effect, and the GIS (office-based) group gave more points to this item than did the home-based CPS group.

<sup>d</sup>Based on a question that fell into Harpaz's category of centrality of work as a life role. Other items were community and religion. The leisure item is the only one that had a significant set of 2-way interactions: male technical employees were unusually high on this item; female CPS employees were unusually low.

<sup>e</sup>Based on a question that fell into Harpaz's category of work role identification. Other items were my company or organization; the product or service I provide; the type of people with whom I work; the type of occupation or profession I am in.

<sup>f</sup>Based on a question that fell into Harpaz's category of importance of work goals. Based on the concerns in this paper I added convenient work location and flexible working arrangements. Items not mentioned in the table: opportunity to learn new things; good interpersonal relations; interesting work; a lot of autonomy; good job security; good match between job requirements and abilities and experience; good physical working conditions; a lot of variety. A separate factor analysis of these 13 items yielded the flexibility and success factors that were used in the analysis of meanings.

<sup>g</sup>Based on a question that fell into Harpaz's category of centrality of work as a life role.

TABLE A2  
 Personal Meaning of Work  
 (loadings on two emergent factors<sup>a</sup>)

	Factor 1	Factor 2
Meaning of Work: income	-.80	
Meaning of Work: interesting work	+.76	
Important Life Area: leisure	-.72	
Ranking on Significance: money	-.43 <sup>b</sup>	
Ranking on Significance: task	+.36 <sup>b</sup>	
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Important Life Area: family	+.52	-.51
Meaning of Work: keep up skills	+.50	-.33
Importance: success factor	-.38	+.33
Importance: flexibility factor	+.35	-.41
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Meaning of Work: status and prestige		+.46
Work's Importance in Total Life		+.63
Important Life Area: work/career		+.83

<sup>a</sup>Based on a principal components analysis specifying two factors (as indicated by the scree test) which account for 41% of the total variance. Factors are rotated orthogonally with a varimax rotation since an oblique rotation yielded an insignificant correlation between the factors. Loadings <.25 are eliminated from the table.

<sup>b</sup>The signs on these loadings have been reversed so that a positive loading means an attribution of great significance, and a negative loading indicates little significance.

TABLE A3  
Mean Factor Scores<sup>a</sup>

	<u>CPS</u>	<u>GIS</u>		
		Total	ICL	free-lance
<hr/>				
<u>Factor 1: intrinsic involvement in the context of family</u>				
	+0.54	-0.67	-0.56	-0.87
men	-0.52	-0.76	-0.63	-1.02
women	+0.63	-0.39	-0.29	-0.52
technical men		-0.91		
managerial men		-0.56		
technical women	+0.66			
managerial women	+0.46			
<hr style="border-top: 1px dashed black;"/>				
<u>Factor 2: instrumental involvement in the context of career</u>				
	-0.22	+0.27	+0.42	+0.01
men	-0.18	+0.34	+0.60	+0.18
women	-0.22	-0.31	-0.24	-0.39
technical men		+0.23		
managerial men		+0.76		
technical women	-0.25			
managerial women	-0.04			

<sup>a</sup>Factor scores were computed by Bartlett's method. Across the total population, they have means of 0 and standard deviations of 1; the correlation between them is 0.0.

TABLE A4  
Satisfactions Related to Factor Scores<sup>a</sup>

	Factor 1 (intrinsic)		Factor 2 (instrumental)
<u>CPS</u> (N=49) <sup>b</sup>	job (.43)*** success/work (.35)** time for family (.31)**	[-.04] <sup>c</sup>	
<u>GIS</u> (N=40)	achievement (.44)*** job (.37)** persl rel's (.36)** balance (.32)**	[+.39]**	achievement (.34)** NOT health (-.32)** job (.31)**
<u>ICL</u> (N=26)	persl rel's (.49)**	[+.29]	job (.43)** achievement (.42)** NOT health (-.39)** NOT time for family (-.32)
[freelance] (N=14)	achievement (.65)** job (.49)* balance (.35) success/non-work (.31)	[+.49]*	NOT persl rel's (-.33)*
<u>Women</u> (N=55)	job (.49)***	[-.01]	
<u>CPS women</u> (N=45)	job (.49)*** success/work (.41)*** balance (.31)** fun (.30)** time for family (.30)**	[-.06]	
<u>Men</u> (N=34)	achievement (.38)**	[+.50]***	achievement (.48)*** job (.43)** NOT health (-.32)**
<u>GIS men</u> (N=30)	achievement (.40)** persl rel's (.34)*	[+.54]***	achievement (.49)*** NOT health (-.46)** job (.45)**

(table continued on next page)  
(footnotes on next page)

(Table A4 continued)

	Factor 1 (intrinsic)		Factor 2 (instrumental)
<u>Technical</u> (N=67)	job (.41)***	[+.05]	achievement (.33)***
. CPS technical (N=25)	job (.40)**	[-.06]	
GIS technical (N=25)	achievement (.48)** persl rel's (.42)** job (.37)*	[+.44]**	achievement (.48)** NOT health (-.40)** job (.36)*
technical women (N=45)	job (.40)***	[-.07]	
CPS technical women (N=38)	job (.47)*** success/work (.45)*** fun (.40)**	[-.07]	
technical men (N=22)	achievement (.44)** persl rel's (.33)	[+.55]***	achievement (.66)*** job (.53)** NOT health (-.38)*
<u>Managerial</u> (N=22)	job (.57)*** achievement (.54)*** balance (.48)**	[-.06]	NOT persl rel's (-.49)** NOT success/work (-.41)*

\* P<.10  
\*\* P<.05  
\*\*\* P<.01

<sup>a</sup>Listed in the table are all satisfactions that correlate  $>|.3|$  with the factor scores. They are listed in the order of the size of the correlation coefficient, which is given in parentheses next to the verbal description of the item. With the exception of the initial freelance listing, only those groups with  $N_s > 20$  are listed in the table.

<sup>b</sup>Reduced, where necessary, by those not answering a particular item.

<sup>c</sup>These figures indicate the correlation between the scores for Factor 1 and those for Factor 2.

## FIGURE 1

### *Traditional home-based pattern* (UK/female)

work means interesting work  
family is very important life area  
work means keeping up skills  
task is very significant  
flexibility is key aspect of job  
work does NOT mean income  
leisure is NOT important life area  
money is NOT very significant  
pay and promotion NOT key aspects of job

associated with satisfactions with:

job  
achievement  
success at work and outside work  
time for family  
personal relations  
balance between work and non-work  
fun and pleasure in life

Not prevalent in US.

## FIGURE 2

### *Traditional office-based pattern* (UK/male)

work/career very important life area  
work important in total life  
work means status and prestige  
pay and promotion key aspects of job  
flexibility NOT key aspect of job  
work does NOT mean keeping up skills  
family NOT very important life area

associated with satisfactions with:

job  
achievement  
NOT health  
NOT personal relations  
NOT time for family

Similar to US.

## FIGURE 3

***Emerging Office/Home Pattern*** (UK: home-based male)  
skills  
autonomy  
balance  
leisure  
health and physical fitness

Also emerging in US.



**FIGURE 4**

	<b>HOME</b> (Domestic Sphere)	<b>PAID WORK</b> (Public Sphere)
<b>FEMALE</b>	cell 1	cell 2
<b>MALE</b>	cell 3	cell 4