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Abstract: Despite the increase in women entering the professional work force, there are still few in systems. Yet women are nurtured as systems thinkers and rely, routinely, on their holistic understanding of complex relationships to resolve dilemmas. Once they have acquired formal systems skills to complement this "natural" systems thinking, women have a powerful array of techniques to use to their advantage at work, in politics, and in academia. Since systems can benefit from the participation of women, and reciprocally, women can benefit from applying systems skills, we should encourage more women into systems and offer them support as colleagues.

Keywords: women; systems; recruitment.

1. Introduction

As we enter the final decade of the twentieth century, there continues to be an increase in the number of women entering the professional, managerial, and technical work force in Britain. Faced with demographic change which brings a decline in the number of school-leavers entering the job market, employers are seeking to fill skills shortages through special training schemes designed to attract and retain mature women. There is even a national Women into Information Technology campaign. In order to meet the perceived needs of the national economy, women have become an identified source for recruitment into the professions. As a group, they have not been so wooed since their manual labour was required during World War II.

Where, then, are the women in systems? A gender analysis of the delegates at systems conferences or the authors of papers in systems journals confirms that they are largely absent. Why should this be?

As my own academic base is in the systems movement and my personal and political base is in the Women's Movement, over the last 20 years I have often had cause to reflect on the relevance of the one to the other.

Here I argue that there are no good reasons for the exclusion of women from systems and some which suggest that they should be a specific target of recruitment. At the same time I shall be pointing to the reciprocity of the relationship; not only can systems benefit from women, but women can also benefit from the understanding and application of systems skills.

2. Women as System Thinkers

Women currently constitute a third of the British work force, but only 5% are in full-time professional or senior management positions (Buckingham, 1989). Most working women contend with low pay, long, inflexible, often antisocial hours of work, juggling perhaps several different, interdependent childcare arrangements, and the regular domestic maintenance tasks of shopping, cooking, and cleaning.

Both at work and at home women quickly identify features of life that enable them to cope with their dual role. Frequently, they anticipate problems before trouble arises and take appropriate preventive action. They are well able to assess whether the introduction of word processing into their office represents an improvement or a deterioration in their working conditions and which neighbours can be relied upon to babysit during a household emergency. It might seem that these examples of decisiveness can easily be taken for granted, or even dismissed as unexceptional demonstrations of **feminine intuition**.

I would claim that such insight, which often leads of necessity to swift decision making, has nothing to do with so-called feminine intuition. It is the result of a real understanding of

the women's personal relationships with the mesh of systems which contribute to daily survival for themselves and their dependants. The development of coping strategies and survival tactics depends on their ability to identify systems in their immediate environment, even if those systems are never acknowledged or named.

Indeed, Orbach and Eichenbaum (1987) describe the process by which girls learn the behavior usually referred to as "intuition." They grow up to believe that the only correct way of being for women is to be "psychologically attached," that

. . . to know what others want, caring for them and being attached to them is right and must be the way they organise their lives. They must create a selfhood dependent on this kind of connecting to others.

Girls are rewarded for recognizing systems and connectivity. Thus women are nurtured as systems thinkers, developing a learned, apparently intuitive, ability to apply holistic principles to any situation.

Women may also have environmentally encouraged traits that help them to recognize and operate on the subjectivity inherent in systems thinking. Gilligan (1982), researching the development of different moral attitudes in women and men, found that they arise

in a social context where factors of social status and power combine with reproductive biology to shape the experience of males and females and the relation between the sexes.

Whereas men see moral problems and moral conflicts in their lives as concerned with competing rights and exercising impartiality, women see them as concerned with competing responsibilities. Men rely on fairness (objectivity) as a way of resolving dilemmas; women rely on their understanding of relationships (subjectivity) to come to terms with them.

The strength of Gilligan's work is its legitimization of women's ways of perceiving and dealing with moral crises, which psychologists have traditionally regarded as deviant from the male norm evolved in theories of moral development. Systems theorists or practitioners, however, will have no difficulty in accepting the strengths of a morality based on relationships.

Women's acquisition of **intuition** and their moral development both lead them into a truly systemic mode of understanding the world. There is certainly no opportunity for suggesting that "women can't do systems," since their competence as systems thinkers is manifest in their daily lives. So such a false assertion could not be used to explain the absence of women in systems. Perhaps there is instead a sound basis for arguing that, as a result of their upbringing in our culture, many women are better systems thinkers than many men. It then follows that the systems movement should be seeking to enhance its professionalism by including as many women as possible within its ranks.

3. Systems Skills used to Women's Advantage

No one could expect to be accepted within the systems movement without first experiencing and successfully completing some form of systems education or training. Having acquired the formal systems skills to complement and reinforce the informal or "natural" systems thinking that they have absorbed during childhood and adolescence, women have a powerful array of techniques to use to their advantage.

3.1. At Work

More workers, and therefore more women, are now employed in interdisciplinary fields such as biotechnology, aerospace engineering, medical physics, and computer-aided design. In the fast-developing industries based on these fields, systems thinking provides a way of seeing how new tasks fit into the overall patterns created by applying new technologies. It

also helps in understanding the operational role of increasingly sophisticated equipment and in managing the process of change produced by, and experienced within, sunrise industries.

Marshall's (1984) account of women managers shows that women in managerial positions are able to see beyond the predominant male power culture of the organizational world. Their understanding of key relationships in the working environment and their ability to take a holistic view of the organization enable them to develop more open strategies for dealing with corporate problem solving and personnel. Formal systems skills reinforce this style of working, giving it some of the strength and legitimacy that male styles of working acquire from men's status within the organizational hierarchy.

In some businesses which have been set up, operated, developed, and controlled by women, maintaining a power structure does not figure high in the list of organizational goals. The prioritized values are more likely to express concern for employee health, job satisfaction, and child-care commitments and to lead to the pursuit of contracts for work with direct human benefit, rather than producing high profits or strengthening military advantage. This is a prime example of understanding business systemically and protecting a chosen set of human-centered values in preference to the criteria normally used to measure business success (Carter and Cannon, 1989).

The acknowledged subjectivity of the systems approach legitimizes and promotes decision making in such nontraditional environments. Two wellknown women entrepreneurs, Anita Roddick and Laura Ashley, both founded businesses in which they applied some of these principles; as well as striving for particular value sets, they were also spectacularly successful financially. It seems inconceivable that their understanding of the markets they were entering owed nothing to the application of systems thinking.

3.2. In Politics

A systems approach, stressing linkages between one aspect of life and others, is evident in many of the political battles in which women choose to engage and in the arguments they use in such campaigning. Women in the peace movement demonstrated their systemic understanding of the nuclear debate by taking a new form of action. Camping at Greenham Common and other bases, they emphasized the need for peace in order to safeguard the survival of future generations and the planet as a whole (Harford and Hopkins, 1984). The power of their arguments touched a chord in yet more women, attracting them to the peace movement in unprecedented numbers.

Women voice their concern over pharmaceutical research which refuses to address the complex social origins of mental and physical illness. Women are active campaigners in the green movement, whose ecological arguments are explicitly based on a systems view. These are but three among the plethora of issues which require orchestrated, public confrontation.

However, many policy makers, our own government with its woman leader included, still prefer to believe that women are not fit to take part in public decision making or to understand what takes place beyond the confines of "Kinder, Kuche, Kirche." The potential role of women in politics is denied and their public voice is often ignored (or perhaps denial is a strategy for containment). Systems thinking, which encourages a holistic approach to political issues, can empower women to subvert and undermine the male dominated ethic of policy making and, simultaneously, to change the direction of their own lives.

3.3. In Academia

The women's movement has generated Women's Studies as an academic discipline and inspired feminists working in other fields to apply feminist research methods to their own subjects. During the 1980s, one of the most interesting debates has centered on feminist critiques of science and scientific method. Keller (1983), writing about the work of the geneticist and Nobel Laureate, Barbara McClintock, has suggested that some scientists develop a subjective, more connected relationship with the subject of their research than

others. She uses this as a key feature in describing a feminist model of science (Keller, 1985); it is undoubtedly a systems approach to understanding and the acquisition of knowledge.

Feminist critiques of technology have followed on from discussions about the gendered nature of scientific research. I have argued elsewhere (Carter and Kirkup, 1990) that if there is potential for developing a feminist model of engineering, it would be predicated on incorporating the teaching of systems at a very early stage, and in all branches, of engineering education. Feminist method in engineering, as in science, would depend on a reexamination of the fundamental assumptions upon which engineering is built as well as embracing holism and acknowledging the role of intuition and subjectivity as concepts central to the practice of engineering.

Whereas engineering is thought of as a male subject, home economics is characterized as female. But even here there is room for the constructive application of a feminist critique. Thompson (1988) argues that under patriarchy, home economics, the science of domestic economy, has been devalued by those who practice the science of political economy. She uses the idea of a dichotomy between the private and the public spheres of life, which she refers to as the Hestian system and the Hermean system, to enable home economists to reassert themselves by regaining a balance between the two. Central to her argument is the explicit use of systems thinking to demonstrate that interaction and iteration are essential to her model of her subject.

If systems is learned and included in the repertoire of methods of inquiry and used consciously as a tool for academic research, it can greatly enrich and reinforce studies by and about women. This is especially true in the area of the physical and social sciences, where a traditional reductionist view of women still prevails, and in newer, interdisciplinary fields. In the current economic climate where research funds are so scarce, systems may be able to help to justify grant proposals by underlining the legitimacy and credibility of the values and approaches used in feminist research.

Systems is clearly a useful discipline for women to draw on in their working lives, in politics, and in academia. It provides them with a framework for developing new ideas and tools for probing organizational and intellectual problems and complexity. Women can make use of systems just as the systems can become stronger by using the talents of women.

4. Conclusion

If the potential for this enhanced reciprocal relationship really exists, why does it need to be spelled out in detail? Why are there no special schemes to recruit women to systems? And where are the crowds of women demanding access to systems courses?

My guess is that my male colleagues have not even noticed that they have created and maintain a predominantly male working environment. Although systems people practice in a liberal profession, that profession has the same male aura and ethos that are current in other, less liberal, professions such as medicine and law. Equality of opportunity is not even an agenda item, because it is widely assumed to exist already, yet members of disadvantaged groups are notable by their absence. This can be unattractive to women considering career choice or career change.

Similarly, women do not demand systems courses, in part because they are unaware of the existence of this body of knowledge. And when they first hear of it, systems can easily be tainted by association with the traditional values of management. It is hard to believe that profitability and efficiency of operation will not dominate an analysis and it is difficult for the uninitiated to appreciate the intrinsic flexibility and openness of the discipline.

So it is up to us to change our image, to make a conscious effort to encourage more women into systems, to offer support to them once they have taken the decision to join us and to be open to the changes in our working methods that their presence might precipitate. A reexamination of the criteria upon which professional recruitment is based might be a good place to begin, which begs the question of how to assess "good" systems thinking. We should

also be searching out areas where we know that systems skills could enhance the work that women are doing elsewhere, in the Green Party, for example. But in offering training in systems, the possible benefits have to be enumerated somewhat cautiously. We need to be wary of reviving the evangelism of the early years of the systems movement, which had a patronizing tone. Instead we can emphasize the practical and political strengths of a systemic way of understanding the world, an approach that may have the potential to reorder the world in a woman-friendly manner.

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