

Careful of science – a feminist critique

Should we beware of science because its capabilities are so life-threatening? Or should we cherish science because it is so precious? Or, alternatively, should we transform science into a life-affirming pursuit by caring labour? All three, says Patsy Hallen.

WE NEED TO BE careful of science because of its life-destroying potential. Half of all scientists and technologists work on war-related research while a third work for large corporations, mainly in teams on profit-motivated research projects not of their own choosing. Science has become incorporated into the military-industrial complex and often serves the interests of profit-making and social control.

The mind-set of our age is that science is neutral and value-free. But

this picture of science functions as a smokescreen. It succeeds in directing our attention away from facts about the social structure of science and its practices. The discourse of value-neutrality performs an ideological service in favour of the status quo and prevents us from examining how science is actually organised (its take-over by the military-industrial complex, its social stratification, its exclusion of female practitioners, its culture, gender and species biases) and what science actually does (its practices of environmental

degradation and the squandering of the earth's biological capital, its practices of social control and the deliberate cultivation of human greed).

Let me point out, though, that no matter how compromised or how deeply embedded in the military-industrial complex, science is one of the most precious human activities. This is one good reason why it needs the talents of the other half of humankind. Science is precious. I learnt this when I went to Nigeria. I started out teaching university students about the limitations of science: 'Save us from science.' As a result of cultural inter-play, I ended up appreciating some crucial aspects of the scientific ideal: 'Save us from fear, superstition and the dictates of personal power.'

'Measured against reality our science is childlike and primitive and yet it is the most precious thing we have'
– Albert Einstein.

But it is for the very reason Einstein articulates, its preciousness, that science needs to be criticised. In order to strengthen it, in order to take care of it, we need to understand its contemporary nature. We need to see that certain aspects of late 20th century science are repugnant, anti-creative, life-threatening, devastating to biological richness and diversity and disruptive of dignity and freedom.

We are prevented from seeing the way science actually works and whom it excludes because of the way we are educated about science and because of the way we are educated as scientists. Most scientists are not heroic adventurers working on the challenging frontiers of knowledge. They are puzzle-solvers within normal science. Which scientist would choose to develop a new flavour of cat food? And even when the area of research and development is new and challenging, who sets the agenda? How many scientists would choose to genetically engineer flowers to be longer lasting and to bear the company colours?

Human values and interests shape science in the following ways:

- the selection of goals for science;

- the choice of problems and research projects on which science concentrates;
- the methodologies and knowledge-producing practices of science;
- the choice of experimental design;
- the way we behave towards our research subjects;
- the language we use (for example, the terminology, the 'hard' sciences: are women less well-equipped to penetrate nature's secrets?);
- the very content of our theoretical formulations in science;
- the evaluation and interpretation of scientific results; and
- whom we consider as scientists (depending on one's gender or class, identical work earns the label of lab assistant or scientist).

The argument that science functions to increase profit, to maintain social control and to exploit nature has been convincingly made many times. But when feminists use gender as an analytic category, they face immense obstacles, for they touch new raw nerves. If science is neutral, the scientist is absolved from the complex social responsibility scientific work entails: we know how hard it was to fight this battle. If science is free of gender-bias, the scientist is absolved from giving up his privileged position: we can see how hard it will be to fight this battle.

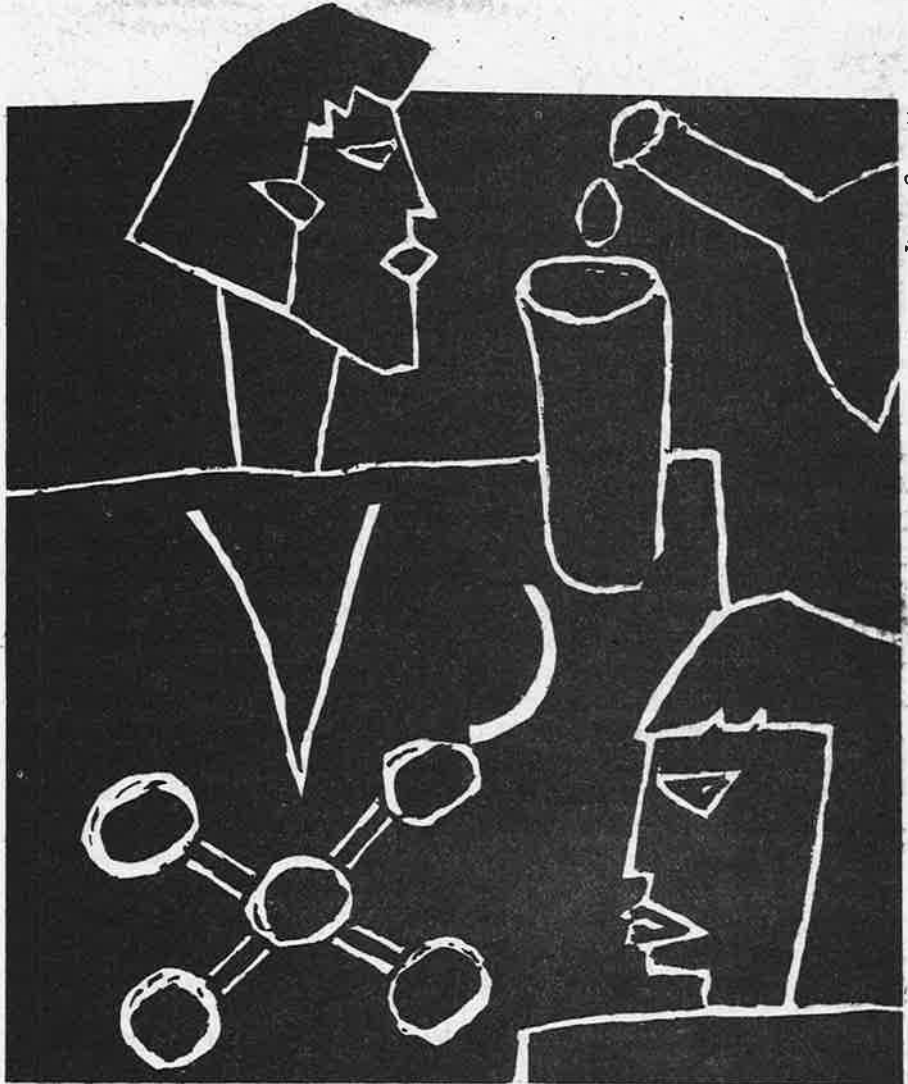
Science needs to confront head-on the problem of its biases: its masculine bias, its cultural bias. As Marion Namenwirth states: 'Patriarchal science needs a coronary bypass and feminism is [helping to] provide it.'

Having considered how and why we need to both beware of science and to cherish science, I would now like to consider three strategies for transforming science:

- ensure that more women enter science;
- promote more equally recognised women in science; and
- metamorphose science by nurturing a world of difference.

'Science it would seem, is not sexless; he is a man, a father and infected too'

— Virginia Woolf



Late Night Graphics

Masculine Bias

Aristotle was an outstanding naturalist. He founded the fields of biology, botany and zoology. His observations of dolphins, for example, have not been surpassed to this day. Yet he 'observed' that women's brains were smaller and spongier than men's.

Another example of how there is more to seeing than meets the eyeball comes from the leading microscopists of the 17th and 18th centuries. When they looked through the microscope at male sperm, they claimed they saw minute men inside, with arms, heads and legs. Their observations were askew not due to the limited powers of the microscope, but because of their firm belief, dating from the time of Aristotle, that women are only passive incubators, contributing nothing substantial to conception.

Our culture takes as 'natural' the

dominance of men and the subordination of women. As Donna Haraway's work in primatology indicates, researchers in this field are seriously constrained in their hypotheses, observations and interpretations. The (almost exclusively) male researchers exaggerated the extent and importance of male dominance, male aggression, male initiative and the role of competition in controlling troop behaviour among primates. This astigmatism seriously compromised data collection and theory construction in animal behaviour and evolutionary theory until female primatologists entered the field in the 1970s.

Ruth Bleier has shown how today's theories and studies of the brain are no less influenced by male biases. She carefully analyses studies concerned with significant cognitive differences that relate to sex differences, for example, women's supposed inability to

do mathematics. Her studies reveal that these cognitive differences between men and women are given credence far beyond the quality and quantity of the supporting data. Moreover, Bleier tried to get her criticisms published in a leading journal showing how some of the most influential studies on sex differences in cognitive functioning were seriously flawed, but to no avail. So not only do ideological commitments determine scientific observations, which have the pretence of being 'neutral,' they also determine ease of publication.

Bleier's work raises the several important issues including the question: Why is so much time and money spent on the issue of sex differences in cognitive abilities, when the best experiments seem to show that these differences between men and women are trivial compared to the differences between people of the same sex? The full answer to this question must include the distorting effect of male bias.

We need more women scientists to overcome the distorting effect of patriarchy which looms not only in the social sciences but in the natural sciences. But we need not only more women scientists, we need women to be equally recognised practitioners of science. The majority of people actually practising science are women (technicians) but their work is marginalised and trivialised. Technicians are not as important as 'real' scientists, the argument according status and pay goes, just as housework is not as important as engineering. To express it in Sandra Harding's words: 'Until the emotional labour of childcare and housework is seen as desirable for men, the intellectual labour of science and public life will not be perceived as desirable for women.' In calling for women's equal recognition, we are touching deep areas that require revolutionary changes in the social relations between the sexes. At the moment, our patriarchal society needs 'inferiors'.

Even when the scientific work done by women is objectively indistinguishable from men's work, it tends to be marginalised, trivialised, rendered invisible. James Watson in his book *The*

Double Helix, an account of the discovery of the structure of DNA, minimised the work of Rosalind Franklin and distorted her person. Ann Sayre wrote a book on Rosalind Franklin that exposes Watson's biases. The book is subtitled 'A Vivid View of What it is Like to be a Gifted Woman in an Especially Male Profession'.

In our patriarchal culture, a woman is either not quite capable of first-class scientific research or she must be abnormal as a woman. With white males holding most scientific posts and the majority of prestigious positions, the idea of a scientist becomes fused in people's minds with a white male. So to gain acceptance into the scientific community, women must demonstrate that there is no deviation from the norm in their attitudes and beliefs. Because science has been so firmly identified as male, women in scientific fields have had to mediate between two worlds and a dual identity: to be a 'real woman' is to be non-scientific, to be a 'real scientist' is to be non-feminine. For instance, if a woman scientist chooses to be assertive, she invites criticism since such behaviour is disconcerting coming from a woman; if she tends to be docile and supportive of others, she may be faulted and lose out for not pursuing her career with the appropriate drive.

Hence it seems correct to say that there will not be more equally recognised female practitioners of science until both science's relations with society and the relations between the sexes are altered. This is why we must work towards transfiguring science by caring labour. One way both men and women can transform science is by incorporating both experiential knowledge and the personal dimension into their scientific explanations.

Theorists such as Nancy Hartsock and Hilary Rose suggest that women experience themselves and tend to define themselves concretely, sensuously, relationally. This yields a new notion of power as reciprocal empowerment, the power to energise others. If a science can be generated out of such experiences, it is likely to help topple the edifice of dominance.

These feminist scholars are engaged

not in replacing one paradigm for another (male dominance with female dominance) but in moving the boundaries as to what counts as genuine knowledge. A necessary condition of this profound shift is for scientists to acknowledge that they, like everyone else, have values and beliefs which will affect how they practise science.

One goal, then, of a transformed science is to facilitate scientists' exploration and understanding of the ways in which their personal, social and environmental identities specifically affect their perspectives, approaches, methods, practices and scientific results. Other goals include: to reconceptualise the methods, theories and objectives of science without the language and metaphors of control and domination and to eliminate research that leads to exploitation and destruction. Other allied aims entail the willingness to be accessible rather than élitist and authoritarian, the ability to be humble, recognising that each truth is partial, the facility to be more at ease with uncertainty, being aware of the wisdom of Socratic ignorance, the capacity to recognise the limits of human understanding and the true complexity of nature and the desire to enhance the cultural diversity among the practitioners of science.

For these goals to be aimed at, let alone realised, profound, political and psychological changes must take place at the structural, the collective and the personal levels. These life-affirming objectives will require a tremendous shift, both in our collective consciousness, which is steeped in a mechanistic, patriarchal world-view, and in the structural organization of science, which is embedded in a vast military-industrial complex.

In spite of the overwhelming odds against such deep changes, feminism carries the seeds of a transfigured science. If we wish to unite our head, hand and heart we need to care.

Patsy Hallen teaches at Murdoch University, Perth. This paper is abridged from a paper in The Trumpeter, Winter 1989.