

BETWEEN
MONSTERS,
GODDESSES
AND
CYBORGS

.....
FEMINIST
CONFRONTATIONS WITH
SCIENCE, MEDICINE
AND CYBERSPACE



EDITED BY
JANA LYKKE & ROSI BRAIDOTTI

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Nina Lykke



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INTRODUCTION

Nina Lykke

This book emerges from the expanding field of feminist science and technology studies. The growth of the area reflects the fact that science, medicine and technology are central to contemporary feminist concerns and that the topic is controversial. If we trace the genealogical roots of contemporary feminist science and technology studies, it is obvious that feminist confrontations with science, medicine and technology have called forth strong commitment, mixed feelings and heated feminist debate from the very beginning of second-wave feminism around 1970.

Certainly, feminist science and technology studies did not emerge as a visible research area until the end of the 1970s, somewhat later than feminist research within the humanities and social sciences. This 'delayed' emergence was, however, in no way tantamount to feminist neglect of the political significance of the area in the 1970s. On the contrary, science and technology questions have been woven into second-wave feminism from the very beginning.

A technological takeover of both work and childbearing was, for example, included as an important path to women's liberation in an early second-wave feminist manifesto, *The Dialectic of Sex*, written by one of the initiators of the New York Redstockings, Shulamith Firestone (Firestone 1970). The book, which quickly became an international bestseller, produced heated debate, especially as a consequence of its plea for the elimination of female childbearing through reproductive technologies. The same was the case with another feminist world-bestseller, Marge Piercy's utopian novel *Woman on the Edge of Time*

(Piercy 1976). The novel gained much popularity for its representation of a non-sexist, non-racist and non-classist high-tech utopia. But it generated discussion among feminists as well. As in Firestone's vision of a liberated future, the utopia of Piercy's novel had eliminated female pregnancy and childbirth in favour of babies conceived and born in 'brooders'. Furthermore, the novel speculated on a technologically mediated transformation of another aspect of biological motherhood, lactation. In the utopia of the novel, lactation had become a bodily option for both women and men. Through science and technology, the biological capacities of women and men had been equalized in order definitively to prevent the (re-)emergence of gender inequality.

Viewpoints which held that science/technology had potentials for liberation were, however, far from being the only ones voiced by early second-wave feminism. Indeed, not even 'technophilic' feminists such as Firestone and Piercy embraced science and technology uncritically. Their visions of a liberated future in high-tech societies were contrasted with images of the present-day state of affairs, characterized by science and technology as mediators of oppression, marginalization and exclusion. Other feminists made critical perspectives the primary focus. For example, an important feminist attack on the sexism, racism, etc. of the biomedical sciences and the health care system of the USA was launched by the Boston Women's Health Book Collective in *Our Bodies, Ourselves* (Boston Women 1971). The book became a major source of inspiration for the women's movement in the USA as well as in many other Western countries.

The science/technology-as-liberating-potential arguments were also opposed by science/technology-as-threat arguments, which not only criticized present conditions but also simply rejected modern science and technology as inextricably bound to logics of domination, violence and destruction. Another feminist novel of the 1970s, Sally Miller Gearhart's *Wanderground* (Gearhart 1979), is a famous example of this trend. The novel contrasts a utopian women's community and a dystopian male-dominated society. The women live in perfect harmony with nature and their bodies. Modern technologies are eliminated from their community due to their inherent destructive logic. In contrast to the harmonious and life-oriented women's community, situated amidst nature, the sexist and violent male-dominated society is located in an urban, high-tech environment. This society has led the earth to the brink of an ecological and social disaster. The hope for future salvation lies exclusively with the women, who have totally opted out of modern science and technology.

From these few but influential early second-wave feminist examples, it should be clear that feminist attitudes vis-à-vis science, medicine and technology tend to differ radically. They do also show, however, agreement among feminists that it is an important task to question the socio-cultural roles of science, medicine and technology. Why, then, if the political importance of the subject area was recognized from the very beginning of second-wave feminism, did feminist science and technology studies only begin to take shape as a research field at the end of the 1970s?

No doubt one answer to this question is to be found in the much stronger intrinsic resistance to feminist agendas in the natural sciences than exists in the humanities and social sciences. In her influential analysis of the 'science question in feminism' (Harding 1986), Sandra Harding has convincingly linked this resistance to the fundamental metatheoretical assumptions in the strong positivist and empiricist traditions of the natural sciences. These traditions construct scientific and socio-cultural issues as totally separate. According to them, it is out of the question to combine socio-cultural feminist agendas with scientific enquiries into the non-human and non-social world. Evelyn Fox Keller, who originally was trained as a theoretical physicist and molecular biologist, and who later became one of the founding mothers of feminist science studies, emphasizes in a recent biographical account how the change required a radical shift of mind-set (Keller 1992: 21–5). Beliefs about science, on which her whole training as a scientist had been based, were suddenly challenged. To start discussing gendered subjectivity as something apart from biological sex was unthinkable from the viewpoint of her 'scientific mind-set', as was the idea that beliefs and ideologies (for example, gender ideologies) could affect science.

Seen from the emerging field of cultural and social studies of science and technology, however, such discussions lost their alien appearance. It is therefore no coincidence that the emergence of feminist science and technology studies as an academic field converged with the general development of social and cultural studies of science and technology. Drawing on heterogeneous theoretical sources (post-Kuhnian science history,¹ Marxism, structuralism, poststructuralism, and so on) both kinds of studies focused on science and technology as social and cultural constructions. The study of science was transformed from a study of context-independent discoveries of purely natural and material truths into a study of the way political, social, psychological and other cultural factors shape the scientific enterprise and its technological applications. The constructivist approaches made it possible to analyse how science

culturally has been genderized as well as racialized; and, from the late 1970s onwards, they have given rise to important feminist revisions of science and technology studies.

As far as science history is concerned, works by Merchant (1980), Jordanova (1989) and Schiebinger (1993) have, for example, scrutinized the dualistic ways of thinking on which science of the modern era is based. The authors question the dualisms inherent in the scientific discourses and practices that resulted in the formation of categories of beings who were defined as 'other than' and often 'inferior to' the recognized notion of the 'knowing subject'. We learn how Nature, Matter, Body, Woman, Native and so on were constructed as objectified others, objects of study for the knower, critically identified as the enlightened, white-skinned, bourgeois 'man of science'.

Another path-breaking trend in feminist science studies was set in the mid-1980s by Evelyn Fox Keller's influential analysis of the social psychology of gender and science (Keller 1985). Taking her point of departure in a feminist appropriation of theories of the child's early development of object relations, Keller gives a psychological account of the convergent construction of modern science and masculine identity and of the parallel exclusion of femininity, identified with non-science.

Through such constructivist approaches, the political commitments to science and technology issues on the part of early second-wave feminism were analytically and theoretically grounded. The early construction of a political feminist subject vis-à-vis science and technology was from the end of the 1970s supplemented by a feminist research subject critically questioning the natural sciences.

This relocation and broadening of the space for feminist confrontations with science and technology has, of course, changed their character. The differences between the political claims of the 1970s and the field of feminist science studies today should, however, also be seen as a consequence of the impacts of the postmodern condition on feminism as well as on science. The utopianism of the 1970s has faded away, but so has the idea of a 'successor science' project, which, as stressed by Harding (1986), was a strong motivating force behind much of the early feminist science studies work in academia. The feminist idea of 'successor science projects' is based on the belief that feminists as spokeswomen for 'woman' can produce a new science without the ideological distortions and biases that haunt the existing one. Similar ideas of 'successor science projects' have, as discussed by Harding (1986), also been part of Black Studies. The postmodern attacks on modernity's belief in universal truths and the transparency of language used to

formulate truths, as well as strong present-day feminist commitments to differences (between different women located in different parts of the world, in different ethnic, racial and other kinds of cultural settings) have, however, made the ideas of 'successor science projects' appear naive.

Instead of trying to play the game of highlighting a feminist project within the sciences, the present book therefore takes its point of departure in the political as well as the epistemological chaos of the present condition. But it does so in an optimistic belief in chaos as a productive and, for the time being, more eye-opening state than the pursuit of a successor science. The book is shaped by the belief that feminist science and technology studies are nourished in the creatively chaotic spaces between the boundaries of the cultural and the natural sciences and in transgression of modern dichotomies such as human/non-human, mind/body, gender/sex, artefacts/nature.

Through its main title the book acknowledges its kinship with three dubious creatures: monsters, goddesses and cyborgs. They are, all three, signifiers of chaos, heterogeneity and unstable identities. Monsters have for thousands of years undermined the normal and the stable by their deviant appearances. The early worldmother-goddesses of ancient mythologies are often situated close to chaotic and undifferentiated primordial states. Cyborgs are grotesque post-industrial boundary figures, questioning the boundaries between human, organism and machine, celebrated cornerstones of the modern, scientific world-view. In spite of their differences, the three metaphorical figures are therefore related through their metonymical closeness to the non-orderly, non-stable, non-identical and so on.

Both the cyborg and the monster metaphors have been brought into close touch with feminist science and technology studies by Donna Haraway (Haraway 1991 and 1992). The feminist use of the goddess metaphor is rejected by Haraway as an expression of technophobic nostalgia (Haraway 1991), but celebrated in spiritual ecofeminism. The idea of this book is in no way an attempt to reconcile the three metaphors by a simple erasure of their differences. It offers them as a network of differing but unstably circulating meanings which inform current feminist dialogues and confrontations with science and technology.

The intent of the book is to highlight some currently important sites of feminist dialogue and confrontation with science, medicine and technology from an interdisciplinary perspective. The book has been written by a group of authors from different countries and disciplines, who share a belief in the need for deconstruction of the great historical

divide between cultural and natural sciences; that is, between sciences traditionally labelled 'soft' as opposed to 'hard', 'feminine' as opposed to 'masculine'. Together the authors represent a diverse multidisciplinary. They cover a spectrum of disciplinary backgrounds, ranging from physics, engineering, biochemistry and biomedicine to literary and cultural studies, philosophy and sociology. Furthermore, they favour cross- and transdisciplinary approaches in order to grasp the webs of text, myth, machine, organism, matter and society which postmodern science, medicine and technology seem to put on the agenda in a more pressing manner than ever before.

Another shared belief is that the close links between modern science/technology and global power structures confront feminists who want to intervene with the necessity of working within a network of inter-related issues. Questions of gender, race, ethnicity, sexual preference, age and other socio- and biocultural differences and power differentials are constantly intersecting. This heterogeneity enhances the need not only for multi- and transdisciplinary approaches but also for a superimposition of different lenses of inquiry – feminist, multicultural, ecological, and so on – which can make the different elements of the heterogeneous networks become visible.

The book is divided into two parts. The first part, *Cybergoddesses: Voices of Virtual Reality or Nature?*, explores the unstable boundaries between the world of the 'virtual/artefactual' and the world of 'Nature' as a site for feminist dialogues and confrontations with science and technology. The rapid change in these boundaries as a consequence of the present-day large-scale techno-scientific remappings of the world emphasizes the pressing need for analysis, but also the difficulties that confront the analysts. What is virtual/artefactual? What is natural? How can the voice of the former be distinguished from the voice of the latter? Is it desirable to be able to distinguish? Or should the blurring of boundaries rather be embraced? For whom do 'we' speak when 'we' argue for one or the other? And who is the speaking 'we'? Such questions are raised in Part One from many different sites of investigation, but all of the authors share the belief that no simple answers can be given.

In Chapter 1, I offer a map of the boundary spaces of feminist science studies. The interdisciplinary space between cultural and natural sciences, where important theoretical and methodological approaches to the field are found, is explored from my perspective as a cultural studies scholar, as are the contested zones of 'the artefactual' and 'the natural'. The kinship of monsters, goddesses and cyborgs as agents of change is discussed.

The displacement of boundaries between Virtual Reality (VR) and Real Life (RL) is the focus of Chapter 2. With Greek and Roman domestic goddesses as provocative metaphors, sociologist Susan Leigh Star explores how the ongoing revolution in communications technologies and the development of a global cyberspace change the highly gendered concept of home and its counterpart, homelessness.

The convergence of neurophysiological research on the dolphin brain, Cold War rocket technology, space-science search for extra-terrestrial intelligence, and counter-cultural dreams of the emergence of feminine *yin* values in the 1960s and onwards are explored in Chapter 3 by cultural studies scholar Mette Bryld. The point of convergence is the dolphin, a multilayered icon of postmodern displacements of boundaries between gendered and racialized selves and others.

In Chapter 4, physicist Renée Heller reviews representations in popular physics of the current master-narrative of cosmology: the Big Bang theory. Two pictures, produced by the European Organization for Nuclear Research (CERN), exemplify how these avant-garde science discourses, far from being gender-neutral exposures of natural facts, are pervaded by phallogocentrism and ambiguous references to other gender mythologies.

While 'the virtual', understood both as cyberspace and as cultural constructions of 'nature', has been the focus of the preceding chapters, Chapter 5 challenges the constructivist approaches to science and technology from an ecological feminist point of view. Engineer Kirsten Gram-Hanssen argues that constructivism reproduces the dualism of culture/self and nature/other. She explains the path to non-dualistic ways of perceiving nature which she found in phenomenology.

The need for alternative, non-dualistic approaches which can transcend the dichotomies of self/other and culture/nature is also the topic of Chapter 6. Julia Martin discusses health and healing, drawing on her experiences in South Africa, where she teaches English and practises Buddhist feminist eco-activism. She proposes the Tibetan Great Bliss Queen as an alternative to the arguably over-Westernized feminist metaphors of goddesses and cyborgs.

Chapter 7 looks at the historical roots of subject positions, as taken up by some ecological feminists, who claim that women can give voice to nature and speak for sustainable futures with a special sensitivity. English Literature scholar Sylvia Bowerbank traces the genealogies of these positions in early modernity with its ambiguous, gendered, two-sphered discourses that permitted the paradoxical coexistence of technoscientific exploitation and sentimentalization of nature, which still haunts society.

The second part of the book, *Monsters: Biomedical Bodygames*, like the first part, is a trek into boundary zones where no pure identities, whether natural or artefactual, can be found. The scene of inquiry is now human bodies and bodyparts: female bodies, racialized bodies, deviant bodies, new- and unborn bodies, mother bodies, ageing bodies, aching bodies, gene bodies, and so on. However different the bodies are, most of them seem, nevertheless, to have important features in common: they are configurations of fiction and fact, of textuality and technology, of myth and matter. Furthermore, the bodies are linked by a common destiny. They are far 'beyond the natural body', to borrow the title of Nelly Oudshoorn's latest book (Oudshoorn 1994). They are culturally produced bodies, techno- or cyberbodies, and/or they are the result of monstrous, 'non-natural' births. In this way they question the very idea of a natural body, and they show some of the dilemmas of the heavy technology push, to which modern biomedical research subjects bodies in general, and female bodies in particular. They ask whether or not the consequence is still more control, disciplining and othering of women, or if there are liberating effects, when natural bodies are (re-)invented as techno-bodies by current biomedical bodygames?

In Chapter 8, philosopher Rosi Braidotti traces genealogies of discourses on monsters in the premodern science of teratology, which linked monsters and mothers through the issue of biological reproduction and the role of maternal imagination in monstrous births. As extraordinary embodiments of difference, monsters exhibit dilemmas of differently genderized and racialized bodies, and perform as postmodern tricksters, defying scientific unambiguity.

Chapter 9 highlights how shifting constructions of female reproductive biology expose the move beyond the 'natural body'. Biologist Nelly Oudshoorn tells the story of modern contraceptives, from the invention of 'the pill' to the introduction of a variety of new methods, in the wake of postmodern discourses of diversity, difference, free choice, and so on, which, nevertheless, do not prevent the enrolment of women of colour in coercive discourses on population control.

Shifting constructions of female bodies are also thematized in Chapters 10 and 11, with the medicalization of menopause as focus. Medical doctor Bettina Leysen scrutinizes changes in gynaecological discourses on the postmenopausal body as target of medical intervention – from overt sexism in the 1960s to more subtle arguments, which nevertheless sustain the stigmatization of the ageing female body. The slogan 'feminine forever' has been replaced by 'healthy forever' and

references to the social concerns of youth, denial of ageing and cultural imperatives to keep healthy and fit.

Biologist Ineke van Wingerden draws attention to the processes in which bodies – *in casu*, ageing female bodies – are produced by shifting biomedical theories and intervention practices. Tensions between the virtual reality of scientific representations and the lived experience of bodily pain are questioned in order to go beyond constructivist tendencies to reduce science to mere textuality.

The last two chapters shift the focus to current areas of high scientific prestige: embryology and genetics. Chapter 12 is a case-study of the 'pre-embryo', an entity which emerged from debates on *in vitro* fertilization. Biochemist Pat Spallone shows how the pre-embryo acts as both a work of science and a work of politics and fiction. At a time of great controversy over the ethics of embryo research, the pre-embryo allowed science to challenge ancient ideas regarding the origins and sanctity of life, while preserving age-old patriarchal ways of thinking about the female body and reproductive capacities.

Several earlier chapters have stressed that the technoscientific reinvention of bodies implies coercion and forced control. Chapter 13 reframes the question of whether science/technology represents a threat or liberation in a different way. Physicist and science-fiction writer Elizabeth Sourbut plays with 'gynogenesis', a science-fiction technology which would enable lesbian couples to become the biological parents of daughters. The textual play is meant to disrupt those scientific discourses that perceive new reproductive technologies as a cure for infertility in heterosexual couples, thereby excluding lesbian and single mothers as monstrous others. As with the cyborg metaphor of Donna Haraway, this strategy is intended to provoke thinking beyond the old phallogocentric dichotomies and technophobic rejections of science/technology.

NOTES

1. New trends in science history, initiated by science historian Thomas Kuhn's influential book, *The Structure of Scientific Revolutions* (Kuhn 1962).

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