

one twentieth-century cartoon, more meaningful in the American context, again suggesting that gout is a financial boon to the medical profession.

Susan Sontag argued, at the height of the AIDS panic, that illness should be seen as a scientific category, not a cultural or moral stigma. In their brief epilogue, Porter and Rousseau argue the contrary, that social metaphors may enable the patient to cope with disease. The pain of gout was bearable because of its excellent pedigree and its apparent promise of insulation from worse maladies. Yet the book also shows how regularly, and erroneously, medical men believed that they had understood this elusive complaint. Underneath its fashionable phraseology, which the reader will appreciate according to taste, this entertaining book succeeds very well as an old-fashioned treatise on medical hubris. □

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## Liberator or 'fix'?

### On the Pill: A Social History of Oral Contraceptives 1950–1970

by Elizabeth Siegel Watkins

Johns Hopkins University Press: 1998. 202 pp. \$25.95, £21.50 (pbk)

Richard Davenport-Hines

In 1960, the US Food and Drug Administration accepted the G. D. Searle pharmaceutical company's Enovid pill as an oral contraceptive. By the thirtieth anniversary of this event, 80 per cent of US women born since 1945 had used contraceptive pills at some time in their lives. The pill had been swallowed as a daily routine by more humans than any other prescribed medicine. The US *Ladies' Home Journal* declared on this anniversary that the pill had "transformed our lives" even more than "winning the right to vote", while *The Economist* included the pill as one of the seven wonders of the modern world.

Elizabeth Siegel Watkins set herself the tasks of testing these claims in her intelligent and well-structured monograph, and of documenting changing perceptions of oral contraception from a "private vice" to a "public virtue" and finally to an issue of individual discretion. There is one drawback to her approach. Her evaluation is exclusively concerned, by her own admission, with "the impact of the pill on middle-class American society". In confining her researches to the United States, and by focusing on the experiences and practices of that nation's more articulate citizens, her work can seem insular. Bernard Asbell's *The Pill: A Biography of the Drug That Changed the World* (Random House, 1995) is more journalistic, but his

careful placing of US experiences in an international context provides a more suggestive treatment of social policy issues than Watkins.

In 1951, the feminist American philanthropists Margaret Sanger and Katherine McCormick commissioned the scientist Gregory Pincus to develop an infallible oral contraceptive, intended to liberate women's sexual acts from anxieties about their fertility. This stimulated other researchers to enter the field. In 1957, the G. D. Searle pharmaceutical company began marketing Enovid, ostensibly to treat gynaecological disorders. Its anovulant and therefore contraceptive properties became so well known, however, that by 1959 half a million US women were using it.

Contrary to widespread public and professional beliefs, the contraceptive revolution of the 1960s did not cause a sexual revolution. As demographers analysed the contraceptive habits of married women to document the contraceptive revolution (the pill was unavailable to unmarried women in many areas until the early 1970s), sociologists surveyed the sexual practices of unmarried women to depict long-term changes in sexual behaviour, and journalists bastardized their findings to present their caricature of 'the swinging sixties'. Yet years before Enovid, Alfred Kinsey and other sexual researchers had reported rates of pre-marital sexual intercourse steadily rising since the late nineteenth century. During the 1950s, the US marriage rate reached an all-time high, and the average age at which people married reached its all-time low; by 1959 almost half of brides were aged 18 or less. Many did not want to be burdened immediately with children, but reliable contraceptive information and technology was often unavailable. American puritanism flourished then as now. In 1960, 30 states of the union retained statutes prohibiting or restricting the sale or advertisement of contraceptives. Only in 1972 did the Supreme Court declare unconstitutional a Massachusetts law prohibiting the sale of contraceptives to unmarried people.

Watkins summarizes medical controversies surrounding the pill's safety. From the 1960s, medical studies linked the pill with an increased risk of strokes and breast cancer (although other studies reported that oral contraceptives protected against uterine and ovarian cancers). The validity of these findings has never been conclusively settled. Indeed, during the 1970s, the subject was confused by an often sensationalist 'media blitz', and mired by the intervention of individuals who objected to 'planned parenthood' on religious grounds, or to sexually independent women for other reasons. As a result of these 'health scares', by 1988 almost half of US married couples relied on either male or female sterilization to avoid preg-

nancy. American physicians' fear of malpractice suits raised important issues of 'informed consent' when prescribing oral contraceptives.

Some American feminists also turned against the pill in the 1970s. They regarded it as a technological 'fix' which did not address fundamental issues of oppression. Resenting any form of birth control kept within the jurisdiction of the medical profession, they advocated the diaphragm and cervical cap as barrier contraceptives that women could personally administer. The identification in the 1980s of the sexual transmission of HIV led to a revival in the popularity of condoms. In the early 1990s, Norplant, a subdermal implant that releases a synthetic hormone into the blood, and Depo-Provera, a hormone injection with contraceptive effect, have become available in the United States. However, further contraceptive innovations are unlikely to be developed in the United States. All but one of its pharmaceutical companies were scared out of contraceptive research and development in the 1980s by the intolerable litigiousness of American society.

*On the Pill*, which contains splendid illustrations, is, within its declared limits, an admirable exercise in social history. It depicts the cultural and ideological pressures on US medicine while demonstrating why about 19 million American women still use the pill in 1998. □

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## Even a loose cannon may hit the right spot

### Dancing Naked in the Mind Field

by Kary Mullis

Pantheon: 1998. 222 pp. \$24

Daniel S. Greenberg

In addition to scientific immortality and a wad of cash, the Nobel Prize provides an irrevocable licence to pontificate publicly on any topic, relevant or not to the recipient's expertise. Winners at other great competitions, for example, the Academy Awards and the Miss America contest, may assume an unrestricted right to mount the soap box and pronounce on issues of the day. But, for drawing a respectful, guaranteed audience, no honour can match the Nobel Prize. And no Nobel laureate comes close to Kary Mullis in the exercise of the accompanying pontifical rights.

Mullis earned a place in scientific history in 1983 as the inventor of the polymerase chain reaction (PCR), which quickly became the indispensable laboratory technique for genetics research. For this achievement, he shared the 1993 Nobel Prize for

## Seeking certainty in an unreliable world

### The Golem at Large: What You Should Know about Technology

by Harry Collins and Trevor Pinch

Cambridge University Press: 1998. 155 pp.

£12.95, \$19.95

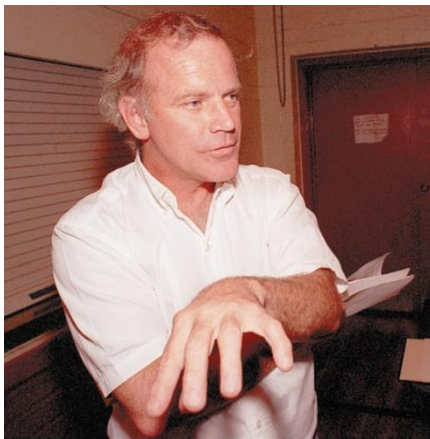
Barry Barnes

Of the many impressive texts that use case studies to convey 'what you should know about technology', *The Golem at Large* is the clearest and simplest. The authors rework existing materials with great care to produce a valuable introduction to their topic that is accessible to anyone. It is, however, necessary to clarify just what that topic is. The case studies presented here are all controversies, about the efficacy of technological artefacts, or the adequacy of technical knowledge or advice. Harry Collins and Trevor Pinch are concerned with the unreliability of what is generally regarded as, and indeed found to be, reliable. They do not focus that concern merely on technology: only three of the seven case studies relate to the working of artefacts; the others describe debates between scientists or technical experts.

The message of the book is that experts are fallible and liable to make mistakes. The claim may seem unremarkable, and is often stressed by experts themselves. But Collins and Pinch insist that a widespread image of scientific knowledge as certain, and technological devices as unconditionally trustworthy, needs to be opposed. Perhaps they are right: memories linger of how BSE, or 'mad cow disease', was said to pose "no conceivable risk" to humans, and many similarly ill-judged remarks are quoted here. On the other hand, perhaps they exaggerate the importance of this myth of the certainty of science as a foil for their own arguments. Either way, it is worth asking whether a book designed to attack claims of certainty and omniscience would not be better entitled



Crash test: technological devices should not be trusted unconditionally, say Collins and Pinch.



Mullis: as a Nobel laureate "no door in the world will fail to open for you at least once".

chemistry. Beyond that distinction, Mullis stands out for a number of reasons, including behaviour that oscillates between merely eccentric and obnoxious, and utterances that, when not loony, are reminiscent of the child who exclaimed on the emperor's state of undress. He also has an unrestrained penchant for faecal and copulatory terms.

Without the Nobel Prize, proclaimed on a book jacket that pictures Mullis shirtless with surfboard, it is doubtful whether this bizarre pottage would ever have found a publisher. But here it is, an easy weekend read that includes charming recollections of his childhood tinkering with chemistry, hair-raising accounts of trips on LSD and other drugs, disbelief in HIV as the cause of AIDS, and denunciations of those who do not share his respect for astrology. ("There's no proven body of facts in the social sciences", he asserts, "that says human behavior does not contain elements that are related to planetary positions at the time of birth.")

Along the way, Mullis also provides pithy insights into the workings of modern science, observing, for instance: "Probably the most important scientific development of the twentieth century is that economics replaced curiosity as the driving force behind research." And: "When the National Institutes of Health makes an announcement through one of its many spokespeople, who checks out the credibility of that statement? Checks and balances are hard to come by in a scientific establishment that is supported from outside by a populace unskilled in the scientific arts."

Mullis recounts the well-known tale of how the PCR breakthrough occurred to him during a long, night-time drive to his northern California cabin, a girlfriend at his side—one of many girlfriends sprinkled throughout his book, along with the three wives who preceded his current spouse.

Mullis acknowledges the Nobel Prize's power to suspend critical judgement in otherwise sensible people he encounters. "Once you have been given that accolade," he

notes, "no door in the world will fail to open for you at least once. It is a free pass for the rest of your life" — even in the case of Mullis, self-described as "a loose cannon on the deck".

His recognition of the "at least once" limitation on doors opening for Nobel laureates is based on experience. Several years ago, Mullis was invited to lecture on PCR to the European Society for Clinical Investigation. According to an indignant report by the outraged president of that organization, Mullis's "only slides (or what he called his art) were photographs he had taken of naked women with colored lights projected upon their bodies". The president added that, in remarks to the audience, Mullis "accused science of being universally corrupt with widespread falsification of data to obtain grants". In a published warning to colleagues, the president declared that his society "will not be inviting Dr Mullis to further meetings".

For those who might be similarly offended by his words and slides, Mullis later announced that for a minimum of \$500 he would refrain from lecturing at any institution. He explains that he derived the concept of payment for not appearing from his experience with the Glaxo pharmaceutical company, which had acquired Burroughs Wellcome, the manufacturer of AZT. Glaxo, he writes, had offered him a \$1,500 speaking fee in 1993. When he responded that it was not enough, Mullis reports, Glaxo accepted his demand for \$3,000 and two first-class air fares. Glaxo then cancelled the invitation, he writes, when it learned that "I would speak about the fact that there is no scientific evidence that HIV is the probable cause of AIDS and that I believed people taking the drug AZT were being poisoned." Whereupon, Mullis continues, he demanded \$6,048 to compensate for loss of "income from other potential engagements" that he had coupled to the lecture trip. Glaxo promptly paid that amount, he reports, providing the inspiration for a Mullis programme entitled "Have Slides, Will Stay Home. Yes ... But You Must Act Now ... Special Offer".

Abandoning research, Mullis now writes, consults and lectures about science. The immense wealth generated by PCR eluded him. The Cetus Corporation, where he worked when he invented the PCR technique, paid him only \$10,000 for the patent, which it later sold to Hoffmann-La Roche for \$300 million. Neither firm has ever sent him a birthday card, he complains, adding, with characteristic Mullis bravado: "Screw Cetus and the Swiss".

What might have happened if Mullis had captured the riches of PCR? Would he today be dispensing scores of philanthropic millions through the Kary Mullis Foundation? Who would get the money, and for what? Interesting to contemplate; or maybe horrible. □

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