her parents that intrigues her the most: Bateson's abstract intellectualizing, his pessimism about the possibility of change in human affairs, his defiance of social convention, set next to Mead's eagerness for ever more data, her confidence that she could effect change for the better, her care to observe social conventions at least outwardly. Mead had Catherine take dancing lessons and write proper replies to formal invitations and taught her how to wear gloves. The richness of a culture, she believed, was in its details. Bateson taught his daughter natural history and logic. Mead taught her to accept and respect cultural differences and to see the patterns in each.

There is much more in this splendid book. *With a Daughter's Eye* is a perceptive double portrait of Gregory Bateson and Margaret Mead, an invaluable addition to the record, and above all a profoundly human document in which, as the author intended, personal experience illumines larger issues and "knowledge and art and caring are all intertwined."

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An Argument for Moderation

The Culture of Technology. ARNOLD PACEY. MIT Press, Cambridge, Mass., 1983. viii, 210 pp., illus. $17.50.

In this book Arnold Pacey says little that has not already been said by others, and he provides a somewhat limited perspective on most of the topics he addresses. Nevertheless, the book is quite worthwhile for almost anyone with an interest in technology policy and the social impacts of technology.

In the jacket blurb Elting Morison notes that Pacey "takes his charge from Francis Bacon," and Pacey himself makes reference to Bacon in several key passages in the book. But if Pacey is to be associated with a major historical figure, Aristotle or Thomas Jefferson would be at least as good a choice. In a very readable style, Pacey takes a peripatetic approach to a range of important problems and arrives at conclusions that closely approximate those which Aristotle's man of wisdom would reach in aiming for the Golden Mean between the extreme positions. Pacey indicates that he himself, though trained as a physicist, follows a lifestyle that tends toward the low-tech rather than the high-tech end of the spectrum and is a "near-vegetarian" environmentalist. But he closes the book by asserting that if human needs are to be met in "a civilized, humane way, we require a continuous, active dialogue, not the one right answer offered by either of the opposite points of view. . . . Openness, democracy and diversity are what will save us, not some environmentalist blueprint, nor any technocratic plan" (pp. 177–178). He sees this emphasis on open-ended, participatory, dialectical exploration of the unknown future as modeled on Jefferson's "controlling principle" (p. 123).

In moving toward this conclusion, Pacey intentionally uses a method that involves "shifts of scene between past and present—between agriculture and automation . . . [and] abrupt changes in geographical subject, from Britain to ancient Greece and then to Africa, and from industrial North America to rural South Asia" (p. 34). He has adopted this "distractingly kaleidoscopic" unconventional style to try to avoid what he feels are the "traps of linear interpretation" into which he fell in his previous book, *The Maze of Ingenuity* (1976). However harsh his assessment of his previous work might be, the new style works well in this book. Instead of marshalling a set of arguments to defend his thesis, Pacey has collected a number of personal anecdotes and second-hand accounts of specific situations that vividly illustrate and effectively support his basic theses.

Pacey focuses on the process of technological activity rather than on specific products, and he identifies a need for changes at two levels. He describes and demonstrates the virtues of a new type of engineer who is oriented more toward maintenance (and nurturing) than development (and creation of novelty) and who can take a broad interdisciplinary systems approach to problems. But he does not claim that engineers with this type of approach will be able to solve problems any better than the more narrowly oriented experts they would replace. The essential virtue of this new kind of engineer is the ability to work alongside lay people in addressing problems. And this is tied directly to the second level of change—the policy-making level, at which he shows how and why increased democratic participation is more desirable than control restricted to a small technocratic elite.

The knowledgeable reader might be tempted to criticize this book for saying nothing new. But the strongest criticism that can be made fairly is that Pacey does not seem to be aware—or at least he does not explicitly acknowledge—that the general thesis he propounds (that is, that the critical issue is increasing democratic control over technology) and many of the specific subpoints he makes (for example, concerning the difference between male and female attitudes toward technology) have been examined in considerable detail by American writers such as Paul Goodman, Carol Gilligan, Lynn White, Jr., Frances Moore Lappe, Wendell Berry, Buckminster Fuller, Thomas Szasz, Langdon Winner, and many others. But such a criticism, though valid on purely scholarly grounds, would mean that the most significant point about this book had been missed. This most impressive point may not even have been intended by the author: it is simply that the case for increasing democratic control over technology can be made forcefully without appeal to the work of these and other well-known (to some, notorious) American thinkers. It is a thesis that is equally defensible from the perspective of Western Europe, South Asia, China, or any other contemporary culture.

In sum, Pacey succeeds in presenting and supporting his radically moderate thesis so effectively that it is almost impossible to reject it. The more likely reaction of persons who find it threatening (persons at either extreme) is to try to dismiss it as nothing new. But if rational beings can agree on anything, it is that novelty is not a criterion for truth.

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A Field of Astronomy

Glimpsing an Invisible Universe. The Emergence of X-Ray Astronomy. RICHARD F. HIRSH. Cambridge University Press, New York, 1983. viii, 186 pp., illus. $39.50.

Hirsh has taken a new yet fairly limited and clearly defined specialty in science and examined its early growth to maturity in this brief and interesting work. The book benefits from its concentration upon the United States during the 1960's and 1970's—during this period the majority of x-ray astronomy research was performed by or sponsored by U.S. organizations. Hirsh touches upon the forerunners of x-ray astronomy (for example, ionospheric physics and solar ultraviolet and x-ray studies) that provided the instruments, methods, and community structure for its emergence.

The first non-solar x-ray observations were obtained from a rocket in 1962, and in the next half-dozen years about 30