Heinz R. Pagels (Ed.), *Computer Culture: The Scientific, Intellectual, and Social Impact of the Computer, Annals of the New York Academy of Sciences*, Vol. 426 (New York Academy of Sciences, New York, 1984); 275 pages, $66.00

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This edited volume consists of papers presented at a symposium entitled, "Computer Culture: The Scientific, Intellectual, and Social Impact of the Computer," sponsored by the New York Academy of Sciences in April 1983. In his Introduction, the convenor of the symposium and Editor of this volume, Heinz R. Pagels, states that his goals for the symposium are to illustrate the "intellectual excitement, [and] tumultuousness of different viewpoints" in current thinking about computing. In my view, the book's authors have done a good job in describing some of the current state of affairs, although I will also mention several problems.

The text's 275 pages are divided into 20 chapters, grouped into thirteen sections. Most sections have very broad topics, such as "New Directions of the Computer Sciences" or "How Computers Change the Way We Think about Ourselves," but there are also more focused sections such as "Computer Graphics" or "Expert Systems: The Fifth Generation" (very briefly, other sections deal with the social impacts, shifts in the work force, developments in artificial intelligence research, the limits of computation, computers and scientific inquiry, human factors, psychology and education, and a case study of how computers were used in international negotiations about the Law of the Sea Treaty). The style and depth of the chapters also differ, ranging from detailed discussions of empirical studies (G.N. Reeke, Jr. and G.M. Edelman, Selective Networks and Recognition Automata) to broad-brush, informal essays about the future (R.W. Lucky, The Social Impact of the Computer).

Two of the better and more notable chapters are unusual because they were panel discussions among groups of experts rather than traditional essays or reports. Both the discussions, "Has Artificial Intelligence Research Illuminated Human Thinking?" (which included H.L. Dreyfus, J. McCarthy, M.L. Minsky, S. Papert, and J. Searle) and "Computer-Assisted Negotiations: A Case History from the Law of the Sea Negotiations and Speculation Regarding Future Uses" (which included D.B. Straus, T.T.B. Koh, J.D. Nyhart, E.L. Richardson, and J.K. Sebenius) were lively and thought-provoking.

Conclusions

This volume has several strengths: The chapters will appeal to nonspecialist readers; the format of most chapters includes a question and answer session, which is particularly useful to the nonexpert; most chapters will not be quickly out of date.

The volume also has weaknesses: There is no substantive introductory or concluding section to the whole book, nor do any of the sections have an introductory or summary remarks; Most chapters have only small reference sections (5–10 citations), therefore the book is not a real entry point into the larger literature.

One relevant comparison between books comes to mind, and that is the present volume's similar focus to the 1979 MIT Press volume, *The Computer Age: A Twenty-Year View*, editd by M.L. Dertouzos and J. Moses. Both cover similar issues, but I feel that the Dertouzos and Moses book provides greater depth, without sacrificing easy accessibility to the novice.

In summary, I would argue that *Computer Culture: The Scientific, Intellectual, and Social Impact of the Computer* has reached its goal of introducing the excitement of the modern computer culture, but that other volumes of collected essays may have already done this well.