BOOK REVIEWS

Contingent Answers to a Global Question

How Many People Can the Earth Support? JOEL E. COHEN. Norton, New York, 1995. x, 532 pp., illus. $30.

The *Oxford English Dictionary* lists two meanings of the word "population." The first, and much older, is "devastation, laying waste"; the newer is "the total number of people." These meanings have merged in an *idée fixe* of recent public discourse, that population is a prime cause of the world's ills. Central to this notion is the question, Are there already, or will there soon be, too many people for the planet to support? The answer has seemed self-evident to strident voices crying yes and no, in a polarized and rapidly growing literature. Joel Cohen's book is much needed and welcome, a critical analysis based on careful scholarship, aimed at shedding more light than heat.

Cohen begins by expressing concern that "today's . . . population stretches the . . . capacities of the Earth . . . and human capacities for . . . innovation, adaptation and compassion" (p. 11). What makes this book valuable and unusual is a sharpening of this concern into a search for supportable (as opposed to merely agreeable) answers to specific questions. Are there ultimate limits to human population, and are they meaningful or useful? What is known about the future of human population and about ways to influence it? What do we know about population-environment interactions? What actions can we take for a better future?

The question of ultimate limits is examined in three long chapters. Cohen has done a meticulous analysis of the logic, assumptions, methods, and inconsistencies of every major study of limits, and this material should be required reading for all who study population. The book is decisive in its criticism of the idea of carrying capacity, which has a special place as an ill-defined concept, even in the field of ecology from where it came. Cohen's dissection of the efforts to find such a number shows that the notion of a "static human carrying capacity" is "inappropriate [and] useless" (p. 364). Unfortunately, this negative evaluation is unlikely to check the growth of papers that try to estimate such a number.

Fully eight chapters on population document the limits of our knowledge of the past and our tremendous uncertainty when it comes to predicting the future. A fascinating overview of the demographic history of humans is followed by a perceptive critique of demographic projection methods. There is a thorough discussion of the inadequacy of theories that explain, predict, or prescribe policy for changing fertility. Cohen makes the often-overlooked point that demographers are no better able to forecast fertility in the industrialized countries than in the developing world. The discussion illustrates the gulf between "global" concerns (the birth rate has to come down) and "local" actions (declines in birth rate in one place have not yielded proven principles or methods that are sure to be useful in other places, even in the same country). This material is essential background for anyone who reads the documents that emerged from the Cairo population conference.

Cohen makes a convincing case that two uncertainty principles deserve prominent place in analyses of population problems. The "Law of Information [asserts that] knowledge of the present and past is highly imperfect" (p. 369). The "Law of Prediction [asserts that] the more confidence an expert attaches to a prediction about future human affairs, the less confidence you should attach to it" (p. 369). Cohen shows that these uncertainty principles are often ignored by those writing on population, a subject demonstrated by him to be extraordinarily complex and held to be extraordinarily important. Why is this so? One reason is the incestuous relationship between the politics and the science of population. Many discussions of population suffer from what I would call "globalitis," the attempt to force diverse issues into the compass of a single viewpoint. This is typically the result of political concerns, with the aim, as Cohen says, of providing "political instruments intended to influence actions" (p. 233). The most common underlying concern, in the words of Geoff McNicoll (in *Population and Development Review* **20**, 658 [1994]), is the threat that "rapid population growth [poses] to international [stability and] the security and well-being of the affluent low-fertility countries." The emphasis on this and similar fears clouds the literature, diverting attention from meaningful, critical, and constructive debate on problems and policy.

The book moves on to population-environment-resource interactions, with two detailed case studies (of the population consequences of AIDS and of constraints on water supply) and several shorter ones. These set the stage for concluding chapters on the status of the population problem and what can be done about it. The general ideas here—externalities, common resources, constraints, values—will be more familiar to most readers than the material on population and limits; the presentation is typically clear and critical. But this discussion delivers a further message, rarely stressed, about the local-versus-global distinction. Cohen highlights the importance of local factors that shape the perception and fate of population and environmental policy. He argues that the analysis of population problems must include "the interactions between population [structure, health, distribution, migration], environment [physical and biotic], economy, and culture [values, technology, politics]" (p. 387). He notes that these interactions can have different local and global components. I think it worth pointing out that the signature of local economics and culture is revealed in every detailed analysis of demographic change.

This is a good point at which to ask just how bad Cohen finds the population problem to be. I think he would agree with Robert Cassen (*India: Population, Economy, Society*, MacMillan, 1978, p. 330) that "population growth is not a timebomb but a treadmill." In the chapter "Entering the zone" (music here), Cohen notes that current total human population is in a range close to many estimated upper ranges. While the "Law of Prediction" makes me somewhat dubious about the significance of this agreement, the evidence here, and elsewhere, supports concern and considered action. What then are we to do?

We should first recognize, with Cohen, that population policy involves choices by people. Questions about limits, impacts, and changes in population are not sensibly addressed in purely abstract or global terms. They are contingent questions, profoundly influenced by local conditions, expectations, and interests. The importance of context is reflected in Cohen's "Law of Action": it is difficult for policy to achieve exactly its desired effect. In addition, policy analysis must confront squarely our great uncertainty about population processes and policy outcomes.

Cohen recommends scientific work on population to explore the consequences of, constraints on, and interactions between choices. He calls for vigorous interdiscipli-

nary research on these matters, to bring together his tetrad of population, environment, economy, and culture. I agree; what scientist would not? But I am dubious about the future of such research in this country. U.S. universities and funding agencies have a long tradition of indifference to, or fleeting support of, interdisciplinary work. Foundations value research considerably less than actions. The research Cohen wants done requires "localitis," careful consideration of local conditions and interests, and the involvement of scientists in other countries in mutually beneficial ways. I wonder whether "localitis" will be as bad for academic careers as it used to be for the careers of U.S. diplomats. And the political allure of the global view on population is strong; there will be continued temptation to "fabricate 'unambiguous answers to what appear to be simple questions' " (p. 348).

Analysis aside, the choices that are actually made, and how people are induced to make them, are important issues. In his final chapter, Cohen presents a brief but illuminating discussion of games that points to the importance of cooperation, as opposed to coercion or confrontation. He recommends research on ways to define and demonstrate the mutual benefits that link nations and peoples. This is vital, given the widely held view that relationships between nations are zero-sum games. Such considerations are equally important for relationships between individuals and governments, particularly when human freedoms are often viewed as up for grabs in a larger trade-off justified by appeal to population problems. Cohen notes early on that "tyranny by governments does not work in the long run" (p. 11). He also recommends attention to institutional and political factors that influence the trade-offs between efficiency and inequality. But, like many demographers, he does not discuss coercion when talking about recent declines in China's fertility. I wish he had; scientific work can provide valuable perspective on the limits of authoritarianism.

The last of Cohen's recommendations that I mention here is for work on accounting systems that can incorporate factors usually ignored as externalities but intrinsically important to the quality of life and environment. Externalities play an interesting role in what Stanley Engerman (*Social Science History* **17**, 161 [1993]) called the problem of Chicken Little: if the sky is falling, when will it happen? Economists argue that if impending resource limits, say, are going to make the sky fall, we should receive economic signals of impending doom. The absence of such signals is often attributed to unaccounted externalities, usually by people who are not economists. My reading of history is that externalities do force their way into accounting systems, as happened with pollution costs in the industrialized countries. Clear scientific recognition of an externality is usually the first step, and comprehensive accounting can provide a way of achieving this recognition.

Cohen shows that there is no direct answer to his title question. Instead the relationship between people and the planet is evolving and complex, deserving of a careful and searching analysis.

Shripad Tuljapurkar
Department of Biological Sciences and Morrison Institute for Population and Resource Studies, Stanford University, Stanford, CA 94305, USA

■

A Physicist in Germany

Heinrich Hertz. A Short Life. CHARLES SUSSKIND. San Francisco Press, San Francisco, CA, 1995. vi, 190 pp., illus., + plates. $18.25.

Heinrich Hertz was only 31 when he discovered electromagnetic waves in 1888 and only 36 when he died of blood poisoning in January 1894. His was indeed "a short life," but one filled with achievement. He worked at the pinnacle of classical physics, and his discovery of electromagnetic waves not only clinched the case for James Clerk Maxwell's field theory but laid the foundations for technologies that have come to pervade modern life. The son of a leading Hamburg jurist whose own father had converted from Judaism, Hertz was raised in a highly cultured home and received an excellent early education. By the time he arrived in Berlin in 1878, he was already emerging as the golden boy of German physics and the chosen favorite of the great Hermann von Helmholtz. Yet Hertz's evident pride in his achievements was mixed with gnawing self-doubt, and the upward arc of his career was punctuated by bouts of severe emotional turmoil. In both his successes and his anxieties, he is a fitting representative of German intellectual life in the last quarter of the 19th century.

Left, Heinrich Hertz commemorative postage stamp issued by the Federal Republic of Germany shortly after World War II. *Right*, Hertz as a student. [From *Heinrich Hertz: A Short Life*]

Charles Susskind, a professor of electrical engineering at Berkeley, opens his tale by telling how he came to write it. While in London in the early 1960s, he learned that Hertz's daughter Mathilde was living in Cambridge, where she, her mother, and her older sister Johanna had settled after leaving Germany in the 1930s. When Susskind paid her a visit in 1968, she pressed him to help her bring out a new edition of the volume of her father's letters and diaries that Johanna had first published in Germany in 1927. Knowing the labor such a project could involve, Susskind hesitated, but Mathilde's charm and determination soon won him over. Their collaboration resulted in 1977 in a beautifully produced edition (also from San Francisco Press) with German and English text on facing pages. Sadly, Mathilde Hertz died just over a year before it appeared.

The present book draws heavily on the earlier volume and to a lesser extent on letters and family papers held in German archives. After the second chapter, which details Hertz's family background and Hamburg milieu, there is relatively little here that is really new. But Susskind tells the story of Hertz's life and work in a lively and accessible way, and his conversations with Mathilde and forays into the archives help him to illuminate some previously dark points. We learn, for example, that Hertz's depression in 1884–85 resulted from a frustrated love affair (though all details have been lost), and excerpts from his correspondence with Emil Cohn in 1889 shed light on his relations with the British Maxwellians.

This book is hardly the last word on Hertz. Its vigor fades in the last chapters, and the account of Hertz's final years at Bonn is sketchy and repetitive. Susskind could also have made better use of recent secondary works on Hertz and his contemporaries. But the book succeeds at its main purpose: evoking the character and keeping alive the memory of one whose life was all too short.

Bruce J. Hunt
Department of History, University of Texas, Austin, TX 78712–1163, USA