

Feeding the World. Vaclav Smil. MIT Press, Cambridge. 2000. Pp. xxviii, 360, many text figures, bibliography, index. \$32.95 (cloth). ISBN 0-262-19432-5.

This book is an absolute must for all interested in the world food situation and its future. It is the best up-to-date source I have seen on the subject. Smil defines his subject in the widest possible way, and brings together an amazing range of information on all of it. One stands in awe of his data retrieval system. (This is his 15th book, and the others are comparably data-rich.)

The best feature of the book, and intended so to be, is his focus on efficiency as the best way to deal with food shortages in the near future. Much of the book is a long litany of wastes: water and fertilizer wasted in the field, grain lost to weevils and rats in storage, grain fed to livestock that could eat grass, foodstuffs unnecessarily thrown away in processing, and on to plate waste. This last grows ever worse as people live on takeout junk-food and no longer save leftovers. As he points out, we already have the world food problem solved, as far as production goes. We are producing enough food for all humans alive today, and could even provide for the entire population expected to be with us in 2050. The problem is all that loss. And his figures on that are conservative. He believes loss in storage to be around 10 percent to 15 percent; there are much higher estimates.

Smil is a cautious optimist. He tries to steer a course between "cornucopians" and "catastrophists." He dismisses the former (such as the late Julian Simon) with a single tart line: "If the global grain output were to continue growing only as fast as it has done during the 1980s (almost 2 percent a year), the annual harvest of cereals would surpass the Earth's mass in less than 1,500 years...(p. xii)." The catastrophists are much more formidable foes. Much of the book is taken up by debates with Paul Ehrlich and Lester Brown, whose concerns cannot be written off. To be sure, their dire predictions have been wrong; he gives a series of Brown's now-invalidated ones (p. 12). But one might argue that the reason these predictions were wrong is that they scared people into action. After all, they were usually couched in terms of "if nothing is done...."

In any case, something was done and people are now better fed than ever before in history. About 1.2 billion people are hungry, but 1.2 billion are overnourished, so it balances out; the problem is clearly one of efficient allocation, not absolute shortage. (A more politically liberal observer than Smil might say that there is a bit of a redistribution problem there, too.) "If the rich world's food losses could be held to 20 percent of the overall supply, the annual savings... would be equivalent to...nearly half of all cereals on the world market (p. 210)." Mom was right to tell us to "think of all the starving people in Asia"—though, even at the age of eight, I wondered how *my* eating too much and getting fat was helping *them*. Smil has it right: we should stay thin and let the price of food fall.

The bulk of the book consists of a truly incredible assemblage of information on the state we are in — regarding fertilizers, crops, land base, soil erosion, storage, and on to processing, consumption, human nutritional needs, and plate waste. He notes, for example, that some of the gloomy predictions of the 1960s were based on assessments of human protein needs that we now know were far too high. We can get by on a little plant protein; we don't need all that meat. But, if we want

meat, some meats (chickens, pigs) are far more efficiently produced than others (America's adored beef is the worst). Eggs and milk are better still. The greatest value of this book to ethnobiologists, after its basic message of efficiency, is its use as a reference work; it is encyclopedic in coverage of a vast and often obscure literature on agriculture and food.

No one human can bring so much together without making some dubious claims, however. Predictably, most of Smil's are in the optimistic direction, but he has also missed some cheering thoughts.

To begin with the over-optimism, Smil accepts the current projections (by the United Nations and other agencies) that world population will level off around 10 billion in the next couple of generations. I do not believe this. The easy battles have been won: Europe is down to ZPG, East Asia is near it, and some other well-organized, highly educated countries have made a start. The rest of the war is going to be a great deal harder. Birth rates are falling slowly in South Asia and Latin America, but so are death rates. Birth rates are not falling, or not by much, in Africa and the Middle East. In these areas, little or nothing is being done to reduce population increase. China's one-child rules are cracking and the system may crumble. Even the United States continues to grow rapidly, and current governmental policies are increasingly antithetical to demographic leveling off. Absent the most horrific of Malthusian checks, we will probably see rapid population growth throughout Latin America, Africa, and west and south Asia for the rest of this century at least, and appreciable growth in the United States.

This is debatable. Much less debatable — indeed, a clear mistake — occurs on page 194 where Smil claims that “diets of several hundred million people are appreciably enriched by consumption of hunted and collected wild animal species” (apart from fish). Alas, overhunting and habitat destruction have made this statement obsolete. Only in the most remote and thinly populated areas — the Subarctic, the Australian outback, the inner Amazon — do people get significant game meat today. Much more typical is the Yucatan Peninsula where game was a staple food as recently as a generation ago, but now is virtually nonexistent.

Another place where one might question Smil is his section on desertification. He says “...there is little doubt that virtually all early estimates have greatly overestimated the impact of desertification, mainly because they mistook the cyclical nature of these changes for steady degradation.... Desert margins contribute relatively little to global food supply...” (p. 76) There are problems with both these claims. The cyclic waxing and waning of the Sahara against the Sahel was underestimated in the late 20th century, but this does not *greatly* change the estimates. Overgrazing, deforestation, and overcultivation have been devastating. There are too many thousand photographs of “climate change” stopping short at a barbed-wire fence or a reserve border (see e.g. the magnificent collection in Jacobs 1995, or Charco 1999) to make “climate change” a believable explanation of the world's desertification. I have personally seen thousands of cases, on four continents, of a desert landscape giving way—at a fence or other barrier—to a three-foot stand of lush grass or a dense brushland. This can take place on large scales: Even the rather thin protection that Israel gives the Negev has now made Israel's national border quite visible in satellite photographs.

The same could be said for erosion. Smil correctly celebrates the really amazing strides against soil erosion that have been made in the United States, Europe, and some other places, and concludes that soil erosion is not of major concern. Yet he is surely familiar enough with China to know the catastrophic state of erosion there. Perhaps he is less familiar with India and the dry parts of Africa. Clearly he is less familiar with Mexico and Latin America. Of course, there is very little good information on many of these areas, but what we have — and what anyone can see on the ground or from the air — is quite disturbing.

Here, as in some other cases, Smil tends to assume that “no news is good news.” This assumption stands on somewhat believable ground when Smil notes that many national statistics understate production. (Maya subsistence farming in western Quintana Roo produce tens of thousands of tons of maize and fruit a year, none of which gets counted in national statistics.) However, the assumption is hard to credit when soil erosion is at issue. Here, the human tendency is the other way: to overlook and underestimate. Satellite pictures could improve our understanding, if we knew enough about interpreting them.

So much for over-optimism — Smil’s one lapse into under-optimism is in precisely our area. Smil seems only slightly aware of the enormous potential of underutilized and under-researched crops and cultivation systems, to say nothing of wild plants that could be cultivated. All readers of this journal will have their own pet examples and the cumulative total thereof (were we to pool our knowledge) would surely be enough to feed the world a few times over. Possibilities for expansion range from relatively well-known systems like Maya mixed orchards and Spanish olive groves to exotic potential crops like California’s tarweeds and meadowfoam, and from well-known but undervalued animals like guinea pigs to outside cases like oryx and addax antelopes.

But is there a chance that all these measures will be adopted? Is Smil right, or will the catastrophists prove all too correct in the end?

It is well to remember that, although “on average” the world is doing well, the most dreadful fantasies of the catastrophists are now the reality in many countries. These include Ethiopia, Eritrea, Sudan, Somalia, the entire Sahel, and several other African countries, as well as Afghanistan, Uzbekistan, parts of Kazakhstan and Ukraine, North Korea, Haiti, and many more. These suffer from dense and fast-growing populations, collapse of food production, desertification (*not* caused by climate change!), lack of education and research, and, often, other environmental catastrophes, from endemic warfare to Chernobyl. It is noteworthy, but hardly surprising, that the most environmentally devastated countries are also the countries with the worst food problems.

Conversely, the successes of Europe have gone beyond the wildest dreams of the optimists. Zero population growth and lavishly abundant food are accompanied by rapid improvement in the environmental outlook, as green consciousness spreads across the continent. Spain and Portugal are notable among countries that have seen explosive growth in production and income while actually improving (at least locally) their environments.

What accounts for these differences? The conventional wisdom provides us with three possibilities, all obviously wrong. First, most common among environ-

mentalists and still not uncommon among developers, is the idea that "capitalism" is the source of all evil. This clearly does not account for the above picture. Among other things, many environmentalists seem to think that the rich nations are environmentally more trashed than the poor ones, because of high consumption. This is not the case. To see really ravaged environments, one needs to go to such localities as Uzbekistan, Ethiopia, or China. It is the most productive, food-exporting countries that also do the best by their environments. Second, there is the reverse view: Capitalism is what the world needs; socialism is the evil. This fails to account for ongoing and worsening problems of countries that have enthusiastically bought into capitalism and accepted IMF discipline, including most of Latin America and southeast Asia. Third is the idea that dependency and globalization are the culprits. If this were so, we would expect to find countries very tightly enmeshed in the dependency end of the global economy, such as Mexico, Taiwan, South Korea, and Thailand, to be the poor ones. They are not; it is the most isolated countries, such as Ethiopia, Somalia, Bhutan, and Laos, which are the worst off.

There is one simple predictor. Strong yet democratic governments with a strong tradition of accountability are always associated with progress in both food production and environmental awareness. Scandinavia and the Low Countries are examples. Spain, Portugal, Greece and Hungary prove the point by rapidly developing food production and (except possibly in Greece) environmental awareness in the wake of democratization. Weak yet authoritarian governments are at the opposite pole, characterizing the sad examples listed above. A change from democracy to chaos or authoritarian rule accompanies environmental decline (Malaysia, Indonesia, Pakistan), which eventually must lead to food production failure (Guatemala, El Salvador, and elsewhere). It would seem that this correlation should be studied systematically by those interested in the problem. It has more to tell us than either the global optimists or the global catastrophists.

Smil ends his book with a look at China, a country he knows extremely well. Here he crosses swords with Lester Brown whose book *Who Will Feed China? Wake-up Call for a Small Planet* (1995) made the catastrophist case in lurid detail. They both work from very similar factual bases, and (as I know from my own independent research on China) they are both quite reasonable in their interpretations of the data. The difference between them is really over something they never discuss: The leadership China has and will have. Brown assumes that China's leadership will continue to be as it is now. At present, the leaders do not seriously address environmental problems that might limit future food production, and they routinely imprison those who raise the issue. Smil evidently hopes and trusts that a new generation will have new ideas.

Indeed, it appears that Smil's cautious optimism, Brown's worries (see also Brown et al. 2000), or the extreme optimism of the irrepressible and delightfully outrageous Libertarian Ronald Bailey (2000), have much less to do with the facts than with their take on human nature. They all say surprisingly similar things about what we are doing, what we can do, and what we need to do, *technologically*. They even have similar political views, seeing governments as far too prone to hinder rather than help. The difference is that Brown sees governments as inevi-

table and frequently prone to act as they do in Sudan and Afghanistan. Smil looks at the governments of Europe and Canada, and hopes. Bailey dreams of abolishing government altogether.

One wishes Bailey were right. If only people, released from the bonds of the State, would work together for love and profit. Unfortunately, the world is the way it is. I know Bailey is wrong. I hope Smil is right. But if I had to bet money, I'd bet with Brown.

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