organizes to lay claim to public transportation and economic development by designing a “transit-oriented development” in the heart of the neighborhood. In Routt County, Colorado, two often-estranged groups, cattle ranchers and environmentalists, join forces to protect open land and to support conservation-based development (negotiating together what this might mean). In suburban New Jersey, local groups focus on protecting open space and managing growth, recapturing the legacy of the “Garden State” in the face of pressures toward sprawl.

Each of these scenarios contains a different combination of private and public investment, stakeholders, sustainable technology, and creative imagination. Each generates possible models for use elsewhere -- for example, the environmental indicators developed by the Trenton-based group New Jersey Future, or the concept of sustainable “working landscapes” negotiated by cattle ranchers and environmentalists, and increasingly adopted, Shutkin tells us, by mainstream environmental groups such as The Nature Conservancy. Some, like the first two cases, have a strong base in civil rights issues, and provide models for environmental justice in communities of color facing such challenges as “brownfield” redevelopment and urban disinvestment. All illustrate what Shutkin terms “an ecosystem approach to social problem solving, with the environment as both a prime subject and a principal metaphor of civic action” (p.238). The case studies make for exciting reading and allow Shutkin to elegantly present a case for civic environmentalism.

There is little to find fault with in this volume. Although it wasn’t the case for this reader, some may find it a bit of a long ride getting to the case studies themselves, due to the length of the preceding chapters. Some additional references to civic environmentalism in the southern region of the country might be helpful, since this has been the originating place of the contemporary environmental justice movement and the setting for some interesting experiments with civic democracy--the city of Chattanooga comes to mind. Some will say that Shutkin is too optimistic. While he understandably focuses on the creative synergy that emerges in the communities presented here, those same communities are hugely vulnerable to a global capitalism that undermines social capital. Shutkin does not ignore these challenges, but chooses to put his energy elsewhere. Perhaps he too readily dismisses critics of “smart growth” who say that our addiction to growth is one of our most fundamental social problems. However, Shutkin stakes out his position (cautiously but energetically) among the optimists, supported by the experience that he has accumulated and shared with his readers. Let us hope that he is right that civic environmentalism will fulfill “environmentalism’s promise as democracy’s boldest symbol and practice” (p.244). By writing a book such as this one, he contributes to the likelihood of that outcome.

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Whether in Ethiopia or the state of Orissa in India, all around the world, millions of people every year die of starvation, and suffer from malnutrition and under-nourishment. In many parts of the globe, because of either of floods or droughts, the production of food grain is damaged beyond recuperation every year. Moreover, the population growth continues with greater speed than ever before. Overwhelming concern with this situation has plagued the minds of the scientists, politicians, policy makers and planners, and even nonprofessionals, whose discourse on this subject often suggests that doomsday has arrived! After all, can the world possibly feed over ten billion people in the twenty-first century?

At such a juncture, and at the very threshold of the new millennium, Vaclav Smil’s Feeding The World appears as a welcome relief. It comes up with convincing answers to many of the questions that have, hitherto, remained unanswered. It presents a more hopeful picture and suggests that if efforts are made in the right direction, the future of humanity is not bleak at all; instead, it is bright and encouraging. Above all, Smil’s aspirations are based not on fancy but on facts with comprehensive and quality scientific data.

Feeding The World is a rare example of rational and logical interpretation of a huge mass of scientific data. Instead of answering the question of how many people the Earth can feed in the twenty-first century, Smil has rightly chosen a more practical, and a more meaningful inquiry to look into the best means of securing the requisite

nutrition for ten billion people by 2050.

After the "Introduction," the book contains nine chapters followed by up-to-date references. Sixty one figures and four tables in the book contain the latest statistical and scientific data with regard to population, land, water, nutrients, agro-economic-system, biodiversity, environmental pollution, fertilizer, animal food production, harvest and post harvest losses, human energy and protein needs, nutritional transition, health and disease, and et cetera.

In the "Introduction," Smil's summation of the debate between the catastrophists and the cornucopians with regard to the growth of global population and the availability of foodstuff is quite interesting in that it indicates a rapprochement between the two diametrically opposed views. On the one hand, the catastrophists, for example Ehrlich (1968) pessimistically conclude that "the battle to feed all humanity is over" and that "at this late date nothing can prevent a substantial increase in the world death rate" (p. x). The cornucopians, on the other hand optimistically "revel in large population increases as the source of endless human inventiveness, and they consider food scarcity or environmental decay as merely temporary aberrations" (p. xi).

Interestingly enough, the catastrophists and the cornucopians both derive inspiration from the great English Clergyman Thomas Malthus; the former from the First Edition (1778) and the latter from the Second Edition (1803) of An Essay On The Principle Of Population. In the first edition of the Essay, Malthus does suggest "the power of population is indefinitely greater than the power in the earth to produce subsistence for man" and that "this natural inequality· appears insurmountable in the way to the perfectibility of the society" (p. xxvii). However, Smil questions why the closing lines of the second edition of the great Essay is overlooked by the catastrophists, which suggest that "Our future prospects may not be so bright as we could wish, yet they are far from being entirely disheartening, and by no means preclude that gradual and progressive improvement in human society·."(ibid). Malthus further adds:

Although we can not expect that the virtue and the happiness of mankind will keep pace with the brilliant career of physical discovery; yet, if we are not wanting to ourselves, we may confidently indulge the hope that, to no unimportant extent, they will be influenced by its progress and will partake in its success (p. xxviii).

Instead of being a mere critique of the catastrophists, Smil attempts to examine "how correct are the catastrophist's perspective, and to what degree are their conclusions influenced by neglecting those realities that do not fit the pre conceived pattern?" (p. 21). In so doing he also suggests to have a closer scientific look "at the natural foundation of agriculture, at land, water, nutrients, photosynthesis, and biodiversity"(ibid).

After explaining the crux of the population debate in the first chapter, Smil appraises the basics of photosynthesis and crop productivity, photosynthetic efficiency, harvest index, agricultural land, water use in farming, crop nutrients, agro-ecosystem and biodiversity, biodiversity and productivity, and other aspects of agronomy in Chapter Two. In Chapter Three, "Environmental Change and Agro-ecosystems," the author discusses possible consequences of soil changes, soil erosion, soil degradation, soil productivity and maintenance, environmental pollution, ozone level changes, the impact of climatic changes on agriculture, and how agriculture can be made the best source of green house gases. In Chapter Four, "Toward Higher Cropping Efficiencies," Smil deals with two key inputs ®¢ fertilizers and water management. At the very outset Smil declares that instead of intensification and mobilization of new inputs, "we should endeavor to derive the bulk of new needs by increasing the efficiency of the existing uses" (p. 106). More efficient use of fertilizers, prevention of nutrient leakage, reducing fertilizer losses, better use of water, efforts to improve irrigational efficiencies and precision farming have to be the hallmarks for the quest for higher food output during the next two generations.

In Chapter Five, "Rationalizing Animal Food Production," Smil strongly suggests that "diet made up primarily of plant foods but supplemented, especially seasonally, by meat is our evolutionary heritage, and strict herbivory is a culturally induced adaptation (p. 142). In addition to arguing for improving the quality and quantity of animal food by scientific management, Smil also explains the problems and potential of aqua culture development. In Chapter Six, "Consuming the Harvest," Smil suggests that food chain study is an under-researched area and examines three aspects of it. First, he deals with post-harvest losses. Then he looks at the limits of standard methods used to account for food supply. And finally, the author turns to our surprisingly uncertain understanding of actual food intakes.

In Chapter Seven, "How Much Food Do We Need?" the author argues that "our understanding of food requirement is a complex mixture of solid comprehension, tentative conclusions, and continuing uncertainties" (p. 211). Most people do not know what should be a typical daily per capita food energy intake for adults, or how many calories we should consume everyday. In fact, "human food "energy needs are not a simple function of one or two basic variables, but an amalgam of demands whose average rate vary fairly predictably for particular populations with sex, age and body size" (p. 212). Inevitably, these complexities must be kept in mind as we evaluate the adequacy of existing food intakes and as we assess the outlook for desirable change. With high quality data, Smil discusses Basic Metabolic Rates (B M R) i.e. the minimum amount of energy needed to maintain critical body function.

In Chapter Eight, "Searching for Optimum Diets," Smil outlines major trends of often-undesirable nutritional shifts accompanying industrialization and postindustrial modernization. Afterwards, he examines some links between food, health and diseases. Finally, he presents recommendation for desirable diets.

In the last chapter, "If China Can Do It," Smil gives a message to all professionals in this field by

demonstrating that despite its environmental constraints, China has the potential to feed itself. This conclusion is of immense importance for the world's agricultural prospects. Smil hopes that a combination of well-proven economic and technical fixes, environmental protection measures, and dietary adjustments can extracts enough additional food from the world's agro-ecosystems to provide decent nutrition during the next generation without a further weakening of the world's environmental foundations.