many other scientists who have tried to define it. Then we look at number power as brute force; as males versus females; as political leverage in dictatorships and democracies alike; and among poor versus rich. The chapter on war is not so predictable as it might sound; four million Israelis outmatch 100 million Arabs.

The fifth part is an innovative effort to evaluate questions arising, notably ethical considerations and rationality in human behaviour. In some respects this is the most intriguing and illuminating part, in others it is rather disappointing in that it does not take a firmer bite of the pivotal ‘value problems’ at issue, e.g. cooperation versus coercion in population planning; the notion of competitive exclusion, in-groups versus out-groups, religious ambiguities, the evolution of altruism, and the many moral imperatives of a world overloaded with human numbers and their activities. In a concluding section, Parsons considers some solutions to—or rather, quasi-resolutions of—the population issue, outlining some ways forward. The numbers problem is no longer one of people against environments or against each other. It is a case of all people working together to ward off collective disaster. As Parsons stresses, humans will either bring their numbers into line with the Earth’s limits through discriminating and civilised action, or nature will do the job for us in unselective and harsh fashion. For all that this has been said many times before, Parsons lays out our choices through elegant and persuasive argument.

The book wraps up with 1400 references and 1300 names of persons cited. A monumental compendium, which is typical of both the substance and spirit of the book throughout.

Parsons is to be congratulated on a masterly evaluation of his subject—a thesis that has been largely overlooked in the vast literature on population.

How I wish I could have had his book to hand when I first broached the question of population and security in the late 1980s (but then, there would have been no need for my explorations). The book is weighty without being ponderous, exhaustive without being exhausting. It sparkles with scholarship.

Read the book and you will find it as entertaining as instructive. Parsons lightens his treatment with copious quotations by Ehrlich, Bouvier, Pimentel, Brown and lots of other aficionados, plus nay-sayers (“no problem”) such as Simon; also comments by the likes of Solomon, Genghis Khan, Tolstoy, Hitler, Churchill, Einstein and Shakespeare. All in all, the book should rank as a “must” for demographers, sociologists, security experts, historians, political scientists, and whoever else is concerned with human population. Who among us cannot be concerned?

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ISBN 0-7734-8372-1 (Vol. 1)
ISBN 0-7734-8737-8 (Vol. 2)
£ 139.90 (A new edition is now planned by the author at a lower price).


This book represents the outcome of a five-year study conducted jointly by the International Institute for Applied Systems Analysis (IIASA) and the World Energy Council (WEC). Both of these organisations have been analysing energy futures over the past 20 years.

The authors of this book state that it is easier to anticipate the forms in which energy will be demanded by consumers in the future than to estimate the level of energy demand, or which sources will supply that demand. They assert that with increasing per capita incomes around the world, people will demand ever higher levels of more efficient, cleaner and environmentally less obtrusive energy services. What kind of companies will supply these needs is an open question. The authors firmly believe that in the short term (to 2020) there will be great reliance upon fossil fuels, but that after 2020 a wider range of options will apply. This will depend upon which of three major cases and a number of individual scenarios ensue with regard
to policy, environmental protection and international equity issues. The potential for impacts are both global and national in character.

The three major cases envisaged are:

— a future world with impressive technological improvements and high economic growth
— less ambitious technological improvements and intermediate economic growth
— a ‘rich and green’ future with substantial technological progress and unprecedented international co-operation centred upon environmental protection

All three of the cases defined above assume substantial social and economic development, particularly in the developing world and they provide for enhanced energy efficiency. They each share the assumption that global population will grow to 10 billion (10^9) by 2050 and to around 12 billion by 2100.

Chapter 1 (Introduction) sets the economic scene. Chapter 2 provides an overview of the scenarios considered. Chapter 3 reviews global energy needs past and present (from 1850, when coal was king, to the mixed energy provision of today). Chapter 4 considers the factors determining future energy needs: population growth, economic growth, energy intensity improvements, technological change, the resource base and the environment. Chapter 5 investigates the energy system alternatives in the context of the postulated scenarios for the future: fossil sources, renewables and nuclear, electricity and final energy. Chapter 6 explores possibilities and implications in terms of: investments, financing, trade, the costs of energy supply, technology and environmental impacts. Chapter 7 focuses on energy system alternatives in each of eleven global regions: N America; Latin America; Sub-Saharan Africa; Middle East and N Africa; W Europe; C and E Europe; Former Soviet Union States; China and Centrally Planned Asia; Pacific OECD and other Pacific Asia. The final chapter provides a conclusion which attempts to justify this study and considers its message and the outlook.

In all of the scenarios considered the peak of fossil fuel burning for energy needs is considered to have passed, with the share of fossil energy sources declining, either immediately or gradually after about 2000 or 2010. In the most extreme case the share of the fossil fuels returns proportionately to that of its pre-1850 position (i.e. <20%). They take the view that resources per se do not appear to be the main global limiting factor by 2050, but that after 2050 regional scarcities may occur. The authors admit that the transition away from the use of fossil fuels may not be smooth.

This view is somewhat at odds with those of Campbell (1997), and research at Reading University in collaboration with Colin Campbell (reported by Sellwood et al., 1997). They, along with others, have pointed out the dramatic decline in the discovery of Super Giant and Giant oil fields over the past 10 years. It is these fields that guarantee the success of new petroleum provinces, because they are always found first. Campbell predicted that global conventional oil production would peak around the year 2000 and, correctly, that there would be a radical increase in the price of oil before the turn of the Millennium. By about 2008, Middle East producers will account for about 50% of global conventional oil production, but that they too will be at about mid-point of their own depletion by about 2013.

Now, conventional (‘light’) oil is that oil which is easily obtained, because it has a low viscosity and flows readily. It is essential for most forms of transport at present (especially aircraft). It is no easy feat of technology to produce such fuel stock from gas and coal, although it can be done. So my criticism here is that there is still an air of complacency over what could be a much more pressing global problem. All agree that hydrogen is the real fuel of the future.

The situation with regard to energy provision will become even more acute in the mid-term as substantial numbers of ‘middle class’ people (with middle class aspirations) arise in China and other highly populated parts of the developing world. Unless some effective means becomes available to curtail the rise in world population then crops for energy will compete for dwindling space with crops for food. Pressure on the environment will rise inexorably.

The book is well written and excellently illustrated. There is an abundance of graphical data, nearly all in colour. The scope of coverage is very wide, embracing economic, technical and environmental issues (e.g. sulphur emissions, carbon emissions and climate change, Kyoto Protocol).