



**From Rio de Janeiro to Johannesburg.** M. S. Swaminathan. East-West Books (Madras) Pvt. Ltd., 571 P.H. Road, Aminjikarai, Chennai 600 029. 2002. 224 pp. Price: Rs 150.

Prior to the 'World Summit on Sustainable Development' at Johannesburg in 2002, a large number of papers, reports and books were published and a number of workshops and conferences held. Each of such efforts addressed climate change or biodiversity conservation or sustainable energy or food security or sanitation or poverty. This book by the eminent scientist and thinker Dr M. S. Swaminathan covers all these and many more issues relevant to promoting sustainable development, particularly from the perspective of developing countries. This book has ten chapters dealing with issues such as 'sustainable food and water security', 'innovations in managing monsoons and water resources', 'nutrition in the third millennium' and finally, 'action today – not just promises for tomorrow'. The last chapter 'Action today – not just promises for tomorrow' is also on the cover page of the book, emphasizing the importance of action rather than just intentions, negotiations, agreements and promises. It is common knowledge that many of the promises and agreements signed under the 'Climate Change Convention', 'Convention on Biodiversity', 'Convention on Combating Desertification' and even 'Agenda 21' have not been implemented.

The focus of the book is sustainable agriculture and food security. But it covers all relevant issues such as addressing climate change, biodiversity conservation, sustainable water management to practical suggestions for local level implementation such as 'Community food bank' and 'Natural resource management committee' at the village level. The book is full of extraordinary concepts, ideas for action and even catchy phrases which only someone of the stature and a thinker

like Dr Swaminathan can produce. I have never read so many ideas in one book. Some examples are; 'World Environment Organization', 'Convention on Human Development', 'Sustainable livelihood for -township enterprise', 'Sustainable water security', 'Green to evergreen', 'Natural resource management committee', 'community food bank', 'Natural food guarantee scheme', 'food and water for all', 'Do ecology', 'Quality literacy', 'Participatory forest management'. Each one of these concepts is in itself a subject matter for a book or a scientific conference. The author has addressed, though briefly, several aspects for each problem; ecological, economic, institutional, gender and equity. The book is full of practical suggestions particularly for sustainable agriculture and food security.

This book must be read by all the policy makers, scientists and even students dealing with environment, agriculture, water and soil management, forestry and sustainable development issues in developing countries, particularly in India. Though the book addresses all the core issues that should have been addressed in the 'World Summit on Sustainable Development' at Johannesburg, the title is slightly misleading. Going by the title one would expect a detailed discussion on the progress, or rather lack of it, on conventions, agreements and promises made at Rio de Janeiro, as a curtain-raiser to the WSSD in 2002. The book has not addressed such issues. This of course doesn't in any way diminish the value or utility of the book. This book deals with real issues facing developing countries particularly 'Sustainable agriculture and food security', which could have been reflected in the title.

In India there is complacency on the food production front, due to the current large food grain surplus, which of course has not ensured food security for the poor. The book has rightly highlighted both internal and external threats to agricultural future. The most important among the internal threats is the damage to the ecological foundations essential for sustained agricultural progress; land, water, forests and biodiversity. The degradation of these resources, which is occurring in India is likely to threaten future food production. These threats have not received adequate attention. The most important message one has to take from this book is on 'technologies, policies and mea-

asures' needed to promote sustainable agriculture in India.

This book has a rich collection of ideas, policies and institutions needed to promote sustainable agriculture, food security and environmental conservation. Many of these recommendations have been made in the past by Dr Swaminathan himself as well as other thinkers. What is inadequately addressed in the book is an analysis of why such policies or institutional options have not found acceptance by policy makers, researchers, and development agencies. Further, even when some policy options were implemented, they have failed to make the desired impact and the degradation of land, water, biodiversity, etc., continues. There is a need to identify the technical, financial, institutional and policy barriers. Further, detailed strategies have to be developed to implement and monitor the options suggested. There is a need for a national level commission to address various issues and ideas proposed in the book. The crisis in Indian agriculture, food security, degradation of natural resources, absence of institutions to conserve and sustain the resources have not been adequately recognized and addressed in India.

This book provides an excellent overview of the technologies, policies and institutions needed to address the crisis in Indian agriculture. There is a mix of issues and concerns covering local to regional to national levels. The book highlights the inter-linkage between natural resources, health, nutrition, social and gender issues, while addressing agricultural development. A set of solutions addressing environmental, social, economic, policy and institutional aspects are also provided again at local to global level. However, there is a need for further analysis to develop real and implementable strategies. Of course, there are a few examples such as 'community food banks (at about 200 t of grain per village)', 'State level land use board' and 'Natural Resource Management Committee'. The book further suggests specific roles to different institutions, for example, integrated resource management committee which can be set up at every village/watershed/block level in order to plan and implement activities relevant to soil health care; water conservation and management; integrated gene management with concurrent attention to conservation; sustainable use, and equitable sharing of benefits; integrated nutrient supply, with

particular emphasis on the incorporation of the green manure crops and pulses in the rotation; integrated pest management, and finally improved post-harvest technology. Such ideas generated in the book need to be further pursued by rural communities to researchers to policy makers, particularly focusing on sustainable food and water security, with the ultimate objective of sustainable livelihood opportunities for all. Dr Swaminathan should be complimented for putting so many ideas into one book. Now it is for others to carry forward these ideas.

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**The Shattered Self: The end of natural evolution.** Pierre Baldi, MIT Press, 5 Cambridge Centre, Cambridge, MA. 02142-1407, USA. 2001/2002. 245 pp. Price not mentioned.

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As I sit to write this review, there is an item in today's newspaper about the birth of the world's second cloned baby. The news item occupies a small part of a column on the front page, but its contents will occupy many pages of newspapers worldwide by the end of the week.

The story is blunt and sets out, in the best journalistic style, a number of relevant facts: the child is a girl weighing 2.7 kg; she is born to a couple from the Netherlands; her parents are two lesbians; it was a natural birth. But even the most casual considerations of these statements can raise disturbing questions. Who are the parents of a clone? What is 'natural' about this birth? How loosely, in terms of sexual identity, can one define parentage? These and similar questions predicate a book such as 'The Shattered Self' in which Pierre Baldi sets out to explain (and attempts, I dare say, to understand) a few of the complex issues that surround some of the more daring explorations into biology that we have undertaken in recent times. Some of these

are outcomes of the genome era, but some issues have been with us for quite a while.

As a scientific discipline, biology poses the most perplexing problems in modern philosophical thought. In part, this is because of the nature of biological inquiry, which has greatly increased in scope and depth in the past decades, and in part because in many of the traditional areas of philosophy, it does matter, to quote Michael Ruse (*The Philosophy of Biology Today*, SUNY Press, Albany, 1988) that Darwinian evolution is a reality, that 'we are modified monkeys, not the special creations of an all-loving God some six thousand years ago'. This realization is central to any modern discussion of epistemology or ethics, and these issues form the core of the set of questions that Pierre Baldi sets out to investigate in his book.

Why the 'end' of natural evolution, and why has the notion of 'self' been shattered now?

Each of the various scientific revolutions (in the sense of Thomas Kuhn) in biology, the most recent of which is that of genome sequencing, has thrown up a new set of questions that force deeper and deeper levels of self-examination. The theory of evolution by natural selection did much to change the way in which we think of ourselves. By seeing humankind as part of a continuum of ever evolving life (while recognizing the special position we have as a consequence of qualities we possess such as language and abstract thought) the theory of evolution gave a framework within which to understand the origin and diversity of species on this planet. It also provided a phylogeny, the tree of life, that linked all life forms present and extinct, in a single connected graph, underscoring the commonality of origin.

Of course this is not all that straightforward. Indeed, whether evolution is a theory at all is a question on which there are extreme views. For Karl Popper, it was merely a 'metaphysical research programme'. For others, evolution is all post-facto explanation: a series of just-so stories. More fairly, natural evolution (since this is what Baldi sets out to mourn the death of) is simply the most general theory there is in all of biology. Evolution is a fact and the mechanism by which it proceeds is natural selection.

Human intervention can change all this. Again, as I write, there are attempts by Craig Venter and his group, to synthesize the smallest viable genome which

would, if successful, 'create' a new organism. In contrast to all other prokaryotic species, this one will not have a true evolutionary precursor. But this is just the most dramatic of the interventions possible today. Gene therapy essays something similar, but on a less grandiose scale, and with the 'obviously beneficial' goal in mind, that of alleviating the effects of genetic disease. Bringing back extinct species like the woolly mammoth or the quagga, in a Jurassic Park scenario is another possibility, though such projects do not need DNA sequencing per se, as also cloning sheep, cows or humans. The post-genomic world and its new technologies just makes all these scenarios seem more, and indeed, more possible.

The buzzwords of these times are all redolent of 'fiction science', which term Baldi introduces early in the book, and by which he means that science which seems more 'fictional' than real, those experiments that start off as if-onlys. Baldi writes for the layman who is interested in such matters. And such matters range from a discussion of the future of sex, to clones, to DNA manipulation right up to the very nature of thought. In a series of appendices, he explains in as simple terms as possible, the internet and the role that this has played in the genomic revolution, stem cell research and the technology of cloning.

The main thesis that Baldi sets out is that the recent biological scientific revolutions necessitate a basic paradigm shift in how we conceive of our selves. Our notion of 'self' is technologically dated: we think, caveman-like, of identities that are defined by bodies; each person is different, and thinks different thoughts; we reproduce in a certain way. Reality, Baldi contends, is very very different. Reality is the internet, cloning, and genomes. Our human identity is about to take a roller-coaster ride.

It is not easy to internalize this. No matter what, an inner voice seems to say, two clones are not the same person, they have different thoughts, different persona. Maybe so, but as Baldi asks, what about a million? Having two, one can theoretically imagine a nightmare world where one can clone any number of an unnaturally selected individual. The very notion of self lies shattered at the feet of this travesty of evolution.

Of course, more is at stake because one cannot afford to say that such things cannot happen. They have already happened.