



ELSEVIER

Book reviews

***Red Mars*, Kim Stanley Robinson, Bantam, New York, 1993. 572 pp. ISBN 0-553-56073-5; *Green Mars*, Kim Stanley Robinson, Bantam, New York, 1995. 624 pp. ISBN 0-553-57239-3; *Blue Mars*, Kim Stanley Robinson, Bantam, New York, 1997. 761 pp. ISBN 0-553-57335-7**

1. Future visions of Earth from Mars

It is rare to review works of science fiction in academic journals, but it is also rare for works of science fiction to discuss at length ‘eco-economics’, full versus empty worlds, natural capital, hyper-Malthusian population growth, environmental ethics, the energy theory of value, the legacy of ‘Daly’, post-corporate governance, and several other issues familiar to readers of *Ecological Economics*. This epic fictional trilogy by Kim Stanley Robinson, centered on the colonization and terraforming of Mars, does all these things and more in an engaging, well-researched, and thought-provoking narrative that stretches over three centuries into the future.

The best science fiction is an exercise in envisioning. By placing the fictional narrative in the future, one can explore a range of core issues of critical concern to the present, and also paint a rich, multicolored picture of a world to which we can aspire (or one we wish to avoid). Robinson’s trilogy is an insightful addition to the growing legacy of ‘envisioning’ novels and studies which have been recently experiencing a rebirth (Callenbach, 1975; Wagar, 1989; LeGuin, 1991; Robinson, 1994; Williamson, 1997).

The first book in the trilogy (*Red Mars* — winner of the 1993 Nebula Award) covers the

selection of the ‘first hundred’ colonists, their voyage to Mars, setting up the first habitats, early terraforming efforts and subsequent additional colonization, ending with the first Martian revolution in 2061. The whole affair has a decidedly technological optimist (Costanza, 1999) slant, with unlimited energy powering robot factories that do most of the enormous chemical and physical work required. The local rocks are disassembled into their constituent parts and reassembled into all the materials needed to build and run entire enclosed habitats, and at the same time to pump heat, water, oxygen, CO₂, etc. into the atmosphere to begin the terraforming process. But the frailties and complexities of human psychology and politics prevent the technical fix from going too far or too smoothly. In particular, splits develop between Earth-based corporate interests and the colonists, and between colonists favoring rapid terraforming to a ‘Green’ Mars and a small contingent of ‘Reds’ who want to see Mars preserved in its original barren state. In this interesting reversal, the ‘Greens’ become the developers, while the ‘Reds’ are the preservationists, and many of the familiar debates about environmental ethics take on a strange glow in this very different light. Towards the end of the book, a ‘longevity treatment’ is discovered that allows extension of the human lifespan to an indeterminate length. This further complicates population growth and wealth distribution problems (since the treatments are expensive and only available to the relatively rich at first). There are also issues of corporate control versus democracy (Korten, 1999), which eventually lead to a failed revolution in an attempt by the Martians to gain independence from Earth and its transnationals.

The second book in the trilogy (*Green Mars* — winner of the 1994 Hugo Award) deals with the post-revolution restructuring of Mars and continuing terraforming efforts that eventually lead to a breathable atmosphere and average temperatures above freezing. This volume contains discussions of the issues of most interest to readers of *Ecological Economics*. Consider, for example, this passage from a lecture given by the CEO of one of the major transnational corporations discussing conditions on Earth in the late 21st century:

We now use about eighty percent of the net primary product of land-based photosynthesis', he said. 'One hundred percent is probably impossible to reach, and our long range carrying capacity has been estimated to be thirty percent, so we are massively overshot, as they say. We have been liquidating our natural capital as if it were disposable income, and are nearing depletion of certain capital stocks, like oil, wood, soil, metals, fresh water, fish, and animals. This makes continued economic expansion difficult.' (p. 76)

And a couple of pages later:

Fort said, 'Unfortunately, most economists are still working within the empty-world model of economics'. 'The full-world model seems obvious', Sally said. 'Its just common sense. Why would any economist ignore it?' 'We understand the world through paradigms. The change from empty-world economics to full-world economics is a major paradigm shift. Max Planck once said that a new paradigm takes over not when it convinces its opponents, but when its opponents eventually die.' And now they aren't dying', Art said. Fort nodded. 'The treatments are keeping people around. And a lot of them have tenure.' (p. 78).

How does one effect a paradigm shift if everyone lives forever and has tenure to boot? One can

work to change people's minds, but another possibility is to start over on a new planet, and that is what the post-revolution Martian underground does. The novel includes a fairly elaborate discussion of how this new paradigm might work, including an energy-based theory of value and a parallel gift-based exchange system.

The Martian underground (perhaps like the *Ecological Economics* community) is a diverse and contentious group, and a fair bit of space in the novel is devoted to exploring their various positions, many of which will be familiar to readers of *Ecological Economics*. Nevertheless, they manage to hold a global conference and agree on some basic principles. Their chance comes when Earth experiences a huge global flooding event caused by the global warming induced melting and catastrophic slide into the ocean of the Antarctic ice sheet. This causes sea levels to rise by 60 m almost overnight and throws the Earth into total chaos. The Martian underground seizes the moment and successfully declares independence. Then the hard part comes when they have to design a new governance system to replace the old corporate-dominated Terran one, using their previously agreed upon principles. The way this plays out and the conclusions they arrive at make for fascinating reading.

The third book in the trilogy (*Blue Mars*) is a final, peaceful reconciliation of the opposing Red (read environmental preservationist) and Green (read economic development) forces in both Martian and Terran society. Population growth on Earth had become 'hyper-Malthusian' (since many were living indefinite lifespans due to the treatments), but this problem eventually becomes manageable through birth control, combined with limited migration to Mars, and now other planets in the solar system and beyond. The bulk of this third book is devoted to describing the way the many remaining conflicts are resolved, in the context of a Mars that now has a large liquid water ocean, a breathable atmosphere, rain, rivers, forests, wild animals and all the other accoutrements of a living planet. The home world, in the meantime, has moved beyond the corporate-dominated governance model to a stage of 'true democracy', or at least a closer approximation to it.

All in all, Robinson's Mars trilogy represents a landmark in the genera. While it is ultimately based on an underlying 'technological optimist' worldview, it is sensitive to the many issues with which ecological economists struggle. It represents a plausible vision of a future that might occur if the assumptions underlying the technological optimist view (primarily unlimited cheap energy) turn out to be correct. In Robinson's vision, even these assumptions are not enough to solve Earth's problems. Their solution ultimately requires a new model of governance and a new 'full-world' economics.

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