

BOOK REVIEW

Global Green Shift, John A. Mathews (2017) Anthem Press, London, 258pp., £70 (hardback), £14.99 (paperback) ISBN 9781783086412

The speed and volume of Far-Eastern – especially Chinese – innovation in business and technology have left Western economies reeling. Western scholars of innovation have also been struggling to keep up. An outstanding exception amongst these is the author of this book, John A. Mathews, of Macquarie University in Australia. The book has already been recognized, first as the source of two articles in *Nature*, and more recently by the award of the prize offered by the international Joseph Schumpeter society for the best book on economic innovation. Schumpeter, as most readers of *Prometheus* will not need to be reminded, is the founder of economic innovation studies. Many of his insights on this topic remain uncontested – the most devoted members of the society that exists to promote his teaching would even claim some to be incontestable.

Although development throughout the Far East has depended upon capture of Western innovations, individual countries have had different emphases in doing this. Japan was the first, beginning as early as the 1870s with policies of learning only from the best in the world, including Britain for a navy, Prussia for an army and the US patent system for industrial development. In the era after World War II, they focused on incremental innovation, by analysing and improving every single component of Western products and then raining down the results on world markets through ‘torrential exports’. India was unique in refusing to join the international convention on intellectual property, because it wanted to build up an indigenous pharmaceutical industry. This gave its firms a double advantage: Western firms were denied the power to file pre-emptive patent applications in India, and Indian firms were free to access the formulae of new drugs simply by reading them as soon as they were compulsorily published on patent databases. As a policy, this was so successful that the best Indian firms reached the stage of discovering new drugs themselves, and began to press their government to join the convention so that they could have patent protection abroad. The characteristic Chinese method of technology transfer has been to allow Western firms access to its conditions for low-cost manufacturing, but only if they took on a local partner.

Mathews is less concerned with these past approaches than with the future innovations that the worldwide problem of climate change needs. His starting point is that all economic development depends upon energy, which in the West has come overwhelmingly from fossil fuels. However, this source will not scale up to the levels needed by such countries as China and India for their further industrialization. These and other countries on the same trajectory will have to find out how ‘to feed their huge energy and resource appetite in ways that enable them to evade the geopolitical limits to growth’. Mathews is clear that these limits do not stem only from having to face ‘unbreathable air and undrinkable water, but also civil wars, revolution and terror’.

Mathews begins by introducing and discussing his CERES (circular economy and renewable energy system) concept. This depends essentially on decoupling, meaning that every increment of economic growth has to be matched by a smaller increment of environmental impact. He deals with current and future means of achieving this, and ends with wondering whether there is, in fact, any way of reconciling ecology with economics. Clearly, if there is, it will depend upon technological innovation, and while China and similar countries have proved to be superb at this (look at how they have brought down the cost of solar energy), the world still depends disproportionately on Western countries for inventions. For example, one of the prototype means of extracting carbon dioxide from the air and turning it into a saleable fuel has huge promise for combating global warming and now operates in Canada and Switzerland. But the world’s ability to invent has been seriously damaged by the way interests have been allowed to shape property rights to suit themselves, rather

than the public good. The entire worldwide corpus of intellectual property law was developed to underwrite invention, but now its use to move money internationally for tax avoidance and evasion is far more economically important. Mathews comes close to endorsing this view in his approval of the work on property rights of Walter Stahel (p.41, but missing from the references).

An important point Mathews has missed, as all but the rarest economists (such as Joseph Stiglitz) do, is the urgent need to get a better way of measuring economic growth. Possibly arising from Whitworth's micrometer invention in the mid-nineteenth century, Kelvin coined the phrase that 'we advance according the precision of our measures'. This must surely be as true in economics as in engineering. The system of national accounts developed in the 1940s by Simon Kuznets and his team seemed to offer a level of scientific precision for devising public policies so that these came to be assessed by the extent to which they contribute to economic growth as measured in terms of GDP. However, this is no more than a financial yardstick, unable to distinguish between productive and unproductive economic activities. A financial innovation that produces profits only by churning money counts just as much as measured by GDP as a technological or scientific one that brings genuine benefit to the world.

In the end, it all comes back to political decisions, so industrialization and climate change problems cannot be solved without changing our existing – and clearly failing – arrangements for governance. As an illustration, Japan is determined to show itself as a very green economy. Part of its effort is a large replacement of fossil-based energy by hydrogen through investment in water-splitting plants to produce hydrogen in Australia and in a new fleet of tankers to transport it. But electrolysis requires energy, and the energy for these plants will come from burning some of the filthiest coal in the world. Consequently, the result is likely to make global warming even worse. We will have to do much better than this, helped by the lines marked out by Mathews's perceptive and well-researched book.

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