

an international lunar-development authority to oversee the eventual economic exploitation of the Moon, and a planetary-defence component to advance our understanding of the science and mitigation strategies for potentially hazardous near-Earth asteroids.

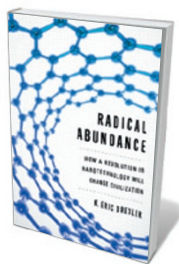
Perhaps Aldrin's most passionate call, however, is for the development of a fully reusable interplanetary transport infrastructure between Earth and Mars. This would break through the current 'reusability barricade' for space travel, an achievement that was visualized for the space shuttle, but never fully realized. A key advance would be to implement Aldrin's long-standing idea of 'cyclers' spacecraft: ferries set in motion on permanent looping trajectories around the gravitational orbits of Earth and Mars (or other staging destinations, such as the Martian moons). There are many technical issues that limit such a concept: for example, passengers to and from these destinations would have to use some sort of shuttlecraft to catch up with the non-stop, high-velocity cyclers. But Aldrin rightly points out that without the infrastructure in place for transportation, as well as for essential long-term resources such as fuel, food and water, we will continue to make only small steps, rather than the next giant leaps, in our exploration of the worlds around us.

I was perhaps most struck by Aldrin's rejection of the idea of returning to the Moon before any foray to Mars. "Don't put any more NASA astronauts on the Moon!" he implores. Indeed, his philosophy is consistent with the current space policy of President Barack Obama's administration, which includes NASA's recently announced idea to attempt to capture a small near-Earth asteroid. This mission is poorly defined at present, but if eventually implemented it could be consistent with Aldrin's call for testing new deep-space rocket components, and for potential scientific and planetary-defence research on near-Earth asteroids. Some of Aldrin's ideas may be having an impact at the highest levels.

We idolize aviation pioneers and their many 'firsts', but take for granted today's global air-transport infrastructure predicated on their achievements. Even the Global Positioning System can be traced back directly to the ventures of NASA and other space agencies. Buzz Aldrin doesn't want us to forget earlier heroic achievements. But he desperately wants us to get to work on the infrastructure and policies needed to make humanity a multi-planet species with an interplanetary economy. ■

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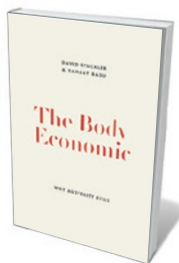
## Books in brief



### Radical Abundance: How a Revolution in Nanotechnology Will Change Civilization

K. Eric Drexler PUBLICAFFAIRS 368 pp. \$28.99 (2013)

Nanotechnology pioneer Eric Drexler bids us to leap in at the technological deep end. We can transform the way we make everything from bridges to circuit boards, he argues, by harnessing molecular machines that operate on digital principles. The result? Desktop or garage facilities that use less fuel, land and energy than today's vast factories and supply chains. The technical and political challenges of unleashing 'atomically precise manufacturing' are substantial, but Drexler cuts deftly through the complexities.



### The Body Economic: Why Austerity Kills

David Stuckler and Sanjay Basu BASIC BOOKS 240 pp. \$26.99 (2013)

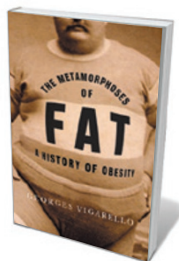
What price a healthy stock market? In this stringent economic analysis, sociologist David Stuckler and epidemiologist Sanjay Basu argue that during a recession, austerity-based cuts to social spending erode public health. Their findings reveal that in cut-riddled Greece, suicide rates soared by 20% between 2007 and 2009, and new HIV cases rose by 52% in the first half of 2011. Meanwhile Iceland, despite its sharp recession, has maintained social safety nets and the health of its population. A sobering call for democratic, informed choices in response to recession.



### Stung! On Jellyfish Blooms and the Future of the Ocean

Lisa-ann Gershwin UNIVERSITY OF CHICAGO PRESS 456 pp. \$27.50 (2013)

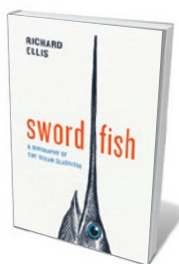
In this bleak take on the future of our seas, Lisa-ann Gershwin chronicles in sometimes exhausting detail how the gelatinous omnivores that are jellyfish are wreaking havoc in waters around the globe. As reams of evidence reveal, human changes to ocean ecosystems are producing perfect conditions for jelly-dominated seas. The switches from chatty to technical language and copious references can jar; but this is a comprehensive summary of the irresistible rise of an arguably unstoppable creature.



### The Metamorphoses of Fat: A History of Obesity

Georges Vigarello (translated by C. Jon Delogu) COLUMBIA UNIVERSITY PRESS 296 pp. \$29.50 (2013)

Corpulence and humanity's shifting perceptions of it feature in this curious 'history of the body'. In Jon Delogu's translation, sociologist Georges Vigarello takes us from the twelfth century, when 'fat reduction' was attempted by cutting the limbs with razors to allow the escape of 'wind', to today's confused and often destructive dynamics of thinness and obesity. Vigarello offers up a *grande bouffe* of food for thought, tracing the impact of evolving mores and medicines on society's perception of an often stigmatized condition.



### Swordfish: A Biography of the Ocean Gladiator

Richard Ellis UNIVERSITY OF CHICAGO PRESS 272 pp. £18 (2013)

Blue-eyed, bulky, fast and sporting a sword-like upper jaw, the broadbill swordfish (*Xiphias gladius*) emerges in marine natural historian Richard Ellis's portrait as an 'apex' predator with real charisma. At home anywhere from the ocean surface to 600 metres down, its unusual adaptability stems partly from specialized thermogenic tissue in its head that keeps its brain warm and protects its central nervous system. A fascinating dip into the history and biology of a seagoing sabre fighter. [Barbara Kiser](#)