the International Whaling Commission (IWC) in 1946 — the machinations of which Burnett lays out using newly uncovered archival material — matters became more complicated as cold-war politics kicked in.

By 1965, a crisis point had been reached. Soviet whaling fleets were exceeding their allotted quota, and seriously under-reporting their catch. The IWC, and the uncertainty of cetacean science, sat uneasily in this sorry story of 'cetapolitics'. Radical conservationists suspected some scientists of perpetuating whaling because it supplied them with the subjects for their studies; other researchers found their work being used as a delaying tactic by the whalers, who could continue their culls under the pretence of aiding science. Thus, the obsessive collection of data, Burnett writes, ended up "obscuring the seriousness of the problem" by becoming an end in itself rather than addressing the pressing issue of population depletion.

Enter the contentious physician John Lilly, whose idea of cetaceans as 'alien species' and wild experiments (culminating in dosing dolphins with the drug LSD) have been seen by some as setting the field back by years. But Burnett shows how Lilly's work was the crucial interface between military bioscience and a new countercultural attitude towards cetaceans. That paved the way for the astonishing effect of a 1971 recording of humpback whale songs by researchers Scott McVay and Roger Payne, which sensitized a generation and galvanized the anti-whaling movement.

The same battle for the fate of the whale is still being fought, three decades after the implementation of the IWC's moratorium on commercial whaling. The scope and weight of Burnett's book symbolizes that continuing inertia.

Perhaps that is why, after his ten years of research, Burnett is left with a Melvillean sense of existential defeat even in his groundbreaking conclusion: "The fundamental lesson I have taken from the research and writing of this book amounts to nothing less than a kind of sweeping epistemological humiliation." Yet by questioning the very nature of our scientific interest in the whale, he has set the tone for a new century of discovery — and, one hopes, recovery. ■

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ENERGY

Curbing urban greed

An overview of resource-guzzling US cities has lessons for us all, finds **David Orr**.

Austin Troy concludes *The Very Hungry City* by writing: "Good cities are good places to live. But they take work." In the United States, that is both the promise and the problem. With few exceptions, such as Washington DC, US cities grew by happenstance, contrivance and often by connivance. The same is increasingly true of megacities worldwide. Growth without planning — as Troy shows in his trek through conurbations from Los Angeles to Copenhagen to Masdar City in Abu Dhabi — has huge implications for energy use and the natural resources that support it.

Troy, an environmental economist, gives us a sure-handed, cogent treatment of urban challenges, focusing on 'urban energy metabolism' — a city's pattern of energy use determined by its location, culture, history and size. Most US cities need massive energy inputs per capita compared with many of their European, Chinese or developing-world counterparts. The price they pay is a vulnerability to scarcity, rising costs and environmental decay. Troy traces energy use through water consumption, transport, construction, the heating and cooling of homes, and the creation of workable communities, and includes sidebars on energy choices from renewables, natural gas and coal to nuclear power, oil and biofuels.

He describes a drearily familiar pattern that has accelerated since the mid-twentieth century. With little planning or foresight, inner cities are forsaken for suburbs, from which people flee to yet more distant 'exurbs' — a pattern of urban greed that consumes land,

Overbuilt Phoenix, Arizona, faces a dry future.

The Very Hungry City: Urban Energy Efficiency and the Economic Fate of Cities

AUSTIN TROY
Yale University Press:
2012. 384 pp.
\$28, £25

infrastructure, people and energy. The United States is littered with extreme examples: on the one hand is Detroit, Michigan, a proud industrial city of around 2 million people in 1950 that is now reduced to a beleaguered population of 700,000 circled by affluent suburbs; on the other is glittering, overbuilt Phoenix, Arizona, facing a future of extreme heat and dessication.

Elsewhere, notably in the US Sun Belt, 'zombie' urban subdivisions built far from city centres drive up energy and resource use. Even urban success stories elsewhere, such as Stockholm, face the challenges of energy and resources that come with continued growth.

How did we get to this point? Americans have traditionally regarded cities as places where you make money fast and move on. The combination of greed and devil-take-the-hindmost economic theories led to the abandonment of whole sectors of urban economies when people found their mobile capital could earn them a bit more somewhere else. Racism also played a large part. Banks refused to invest in minority-dominated inner cities, resulting in segregated poverty and crime. And then there is the car, an indiscriminate wrecker of urban fabric, air quality and climate stability.

As a result of all this, the United States still does not have a coherent urban policy. That has cost the country dear — not least in terms of the human cost of wars fought over the oil needed to subsidize inefficient urban growth.

Underpriced and oversubsidized fossil fuels made energy cheap, but that era is stumbling to an end. Accelerating climate destabilization, peak oil extraction, water shortages and rapidly growing urban populations are looming global challenges. More than half the people in the world live in cities, and it is here that humanity's future will be decided — albeit in a global economy with a diminishing margin for waste and policy mistakes.

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Yet we can curb the urban energy appetite. Troy covers a growing list of successes — stories of improved energy and resource efficiency, better technology, collective solutions and foresight. For example, semiconductor manufacturer Intel is pumping three-quarters of the water it uses in its New Mexico facility back into local aquifers. The city of Los Angeles is belatedly resuscitating its once-extensive urban light-rail system. Vermont has deployed a highly successful statewide energy-efficiency programme.

Policy tools such as location-efficient mortgages — which encourage people to buy houses in areas that have abundant public transport — can help to recalibrate economic incentives with energy and climate realities. Congestion-charge schemes such as that in London are reducing traffic in dense urban areas, and time-of-day charges for electricity cut energy use. Even the Empire State Building in New York has been refurbished to lower its energy use by 38%, hinting at potential changes for older buildings everywhere.

Energy-efficient developments are proving to be popular and economically viable. Denver, Colorado, for instance, has revitalized derelict properties in the lower downtown area. Portland in Oregon set up a growth boundary for the city in 1973, deflecting investment downtown with dramatic results. And creative urban designers such as Peter Calthorpe — a pioneer of community models that integrate principles such as environmental sustainability and mixed-use building — continue to push the boundaries. The keys to making smart development the default setting and not an anomaly are creative, long-term public policies and investment strategies that stress energy efficiency and the deployment of renewable energy.

We may even be seeing the start of a global urban renaissance in places such as Masdar City. Once finished, it will house 50,000 people and get all of its energy from sunlight and other renewable sources. But this does not mean abandoning existing urban settlements. Many older European cities are prosperous, attractive and increasingly sustainable because they have preserved a coherent core and developed a robust urban infrastructure for bikes and light-rail systems. In short, cities in many other countries are doing a great deal better than those in the United States.

There are two models of our urban future. One is a dystopian nightmare of crowded, decaying, violent cities. Troy presents the other: a vision of lean, efficient, human-scaled, sustainable cities fed by efficiency, better design and renewable energy. ■

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Books in brief

That's Disgusting: Unraveling the Mysteries of Repulsion

Rachel Herz W. W. NORTON 288 pp. \$26.95 (2012)

The emotion of disgust has its evolutionary roots in avoiding poisonous food, notes psychologist Rachel Herz. It has penetrated many areas of human life, as shown by lawyers' and politicians' efforts to incite disgust about their opponents. But that doesn't explain why the things that one culture or individual finds repulsive — such as sea-urchin sushi or horror films — are delightful to another. In her lively tour of vileness, Herz argues that disgust is in the mind of the beholder, and explains how studies of Huntington's disease pinpointed the brain areas involved in this emotion.

Simplicity: Simplifying Principles for a Complex World

Alain Berthoz (translated by Giselle Weiss) YALE UNIVERSITY PRESS 288 pp. \$38 (2012)

Living things navigate their complex worlds superbly, making tasks such as walking — which thwart the most sophisticated machines — look like child's play. Simplicity, says physiologist Alain Berthoz, allows life to achieve such feats. It involves transforming “a rich combination of simple rules” into a model of reality that aids action and decision-making, yet respects complexity. Berthoz uses examples from perception, locomotion and neuroscience, but argues that simplicity is at work on all levels, from cells to societies and even in love.

The Ice Balloon: S. A. Andrée and the Heroic Age of Arctic Exploration

Alec Wilkinson ALFRED A. KNOPF 256 pp. \$25.95 (2012)

In 1897, the Swedish explorer Salomon August Andrée sought to use a hydrogen balloon to become the first man to reach the North Pole. Alec Wilkinson's tenth book opens in 1930 with the discovery of Andrée's corpse on a remote Arctic island. It recounts the ill-fated journey through the diaries and photographs of Andrée and his two companions. Wilkinson shows how science and exploration went hand in hand, and how Arctic explorers were celebrities, with the balloonists meriting waxworks in Madame Tussauds museum.

Too Big to Know: Rethinking Knowledge Now That the Facts Aren't the Facts, Experts Are Everywhere, and the Smartest Person in the Room Is the Room

David Weinberger BASIC BOOKS 256 pp. \$25.99 (2012)

Once, says philosopher David Weinberger, experts mastered knowledge and controlled what the rest of us made of it. Now, disciplines such as climate science and molecular biology contain too much data for humans to parse or for theories to explain. Instead, the network is the expert, and anyone can join in. This is creating new forms of communication for science, both educating more people and enabling us to be more emphatically wrong.

Together: The Rituals, Pleasures and Politics of Co-operation

Richard Sennett ALLEN LANE 336 pp. £25 (2012)

Societies are increasingly complex. Yet we stall at mingling with other ‘tribes’, a trend exacerbated by politicians calling for cultural homogenization. Sociologist Richard Sennett says that the key is learning how to cooperate. In the second of his trio on constructive living, case studies reveal how the upheavals of the early modern era and unethical work practices have broken down cooperation. As a route to remaking it, Sennett advocates ‘everyday diplomacy’, an essential craft that could heal societal rifts from the inside out.