



SUPPLY SHOCK

**ECONOMIC GROWTH AT
THE CROSSROADS AND
THE STEADY STATE SOLUTION**

BRIAN CZECH
FOREWORD BY HERMAN DALY

Praise for *Supply Shock*

It may be premature to call this book a masterpiece, but it's evident that Czech has mastered the art of melding science, economics, policy and politics in one readable piece. *Supply Shock* belongs in the classroom, boardroom, town halls and policy circles. It belongs in the hands of all those who care, as Czech might say, "about the grandkids."

—Herman Daly, Professor Emeritus, University of Maryland, School of Public Policy; author of *Steady State Economics*; Lifetime Achievement Award winner, National Council for Science and the Environment

An old economic world is dying, and a new economic world is being born. Brian Czech is one of the midwives of this new economic world.

—Governor Richard D. Lamm

This is a brave book that raises questions we all need to ask and try to answer. Czech proposes the evolution of a revolution, thinking and feeling and working our way toward a fair, sustainable, constructive social order in America and all around the world. The style is clear, cogent, honest, stimulating, free of clutter, and often amusing; it's boredom-free. You'll enjoy it."

—Neil Patterson, president, Neil Patterson Productions; past president, W.H. Freeman and Company, co-founder of Benjamin-Cummings, Worth, and Scientific American Books

Supply Shock clearly describes the heart of what ails us--a zombie-like addiction to economic growth everywhere at all costs. Brian Czech brilliantly dissects the economic theories, models, and mindsets that are diminishing the human prospect while calling it 'progress'. . . . King Midas would have understood the point, as we will someday. There are biophysical limits to economic and population growth and we ignore them at our peril."

—David W. Orr is Paul Sears Distinguished Professor of Environmental Studies and Politics and Senior Adviser to the President, Oberlin College; author of seven books; Lyndhurst Prize winner

Brian Czech has used a remarkable combination of education and experience to build a solid reputation as an innovative thinker. As a wildlife biologist, wilderness ranger, and natural resources advisor to Native American tribes, Czech developed a keen awareness of the status and trends of the American landscape. Then, with graduate studies in political science and post-grad studies in economics, followed by years as a conservation biologist and planner in a federal natural resources agency, Czech put the pieces together to envision an ecologically and economically sustainable future. His are not the loosely-framed and impractical solutions of a casual dreamer or a politically naive zealot. *Supply Shock* is the offering of a man who has tested his ideas, exposed them to peers and colleagues, and appears at countless meetings and conventions where he defends his convictions. *Supply Shock* is an adventure in learning. Czech's vision of "steady statesmanship" is impressive and convincing, and this book easily qualifies as one of the key manuals for those who care about the world and its inhabitants.

—Lynn Greenwalt, former director, U.S. Fish and Wildlife Service

Dr. Brian Czech has dedicated his entire professional life towards the study of wildlife conservation, environmental protection, and human society. *Supply Shock* is the culmination of this thinking, and should be read by leaders, and upcoming professionals in natural resource conservation and environmental management. Bold leadership – the kind needed for management and conservation of the world's natural resources and habitats – can be enhanced by Czech's vision of steady statesmanship.

—Paul R. Krausman, Boone and Crockett Professor of Wildlife Conservation, University of Montana, and past president, The Wildlife Society

The practice of conservation biology has a palpably futile feeling when economic growth is the summum bonum. *Supply Shock* provides an antidote. All who are serious about the big picture of biodiversity conservation should read this book. It will change your idea of what the future can be, and how to create that future.

—Paul Beier, president, Society for Conservation Biology, and Regents' Professor, School of Forestry, Northern Arizona University

Brian Czech comes to the rescue with an honest look at what the global economy is really doing to the earth as he challenges the cherished goal of economic growth. Many who write on big economic ideas lack a deep knowledge of the amazing interactions of the forms of life on our planet and their relevance to economic analysis. *Supply Shock*, in contrast, brings together the keen observations of a skilled biologist with a deep understanding of our failing economic system. Brian Czech has come up with the major economic rethinking needed to prevent cascading collapses of human societies and the rest of the species on the planet.

—Brent Blackwelder, Past President, Friends of the Earth;
Founding Chairman, American Rivers

The past century of explosive population and economic growth, a period that people today take to be the norm, is actually the single most anomalous period in human history--and it threatens to do us in! Growth is normally just the juvenile phase of the life cycle. With maturity, growth slows but development continues as living things become better adapted to their socio-ecological contexts. In *Supply Shock*, Brian Czech graphically shows how the growth-based status quo is destroying the ecological basis of human existence and eloquently describes an alternative path to true economic maturity. A dynamically-evolving but non-growing steady-state economy offers humanity's best hope for achieving a just and secure sustainability within the means of nature.

—Bill Rees, author, Professor Emeritus of Human Ecology and Ecological Economics, University of British Columbia School of Community and Regional Planning, and co-winner of the 2012 Boulding Prize in Ecological Economics and a 2012 Blue Planet Prize.

This well-written and comprehensive volume is a great resource for the issue of questioning "economic growth" and beginning to think about how to move towards a new paradigm for the earth's future. For a society that is trapped in mode of continued growth as a necessity, much like a person riding on the back of a hungry tiger, we need all the help we can get to find our way to a sustainable economic model.

—Doug La Follette, Secretary of State, Wisconsin

Brian Czech marries economics, biology and political science in a brilliant account of why we need to abandon growth and build a new governance system. There is no sociable alternative to the steady state economy.

—Lorenzo Fioramonti, Jean Monnet Chair in Regional Integration and Governance Studies at the University of Pretoria; Senior Fellow at the Centre for Social Investment, University of Heidelberg; author of numerous books on international politics and governments, including *Gross Domestic Problem: The Politics Behind the World's Most Powerful Number*

Economic growth is so 20th century. Remember cheap oil, rural electrification, and Mad Men? They gave us history's biggest hit of expansionary exuberance. But today what little growth we see comes from consumer debt, deficit spending, and natural resource liquidation. This can't go on, and it won't. What's the alternative? As Brian Czech lucidly explains, it's time for our economy to start acting like a responsible adult in a world of limits. This book reeks of sanity: read it!

—Richard Heinberg author, *The End of Growth*

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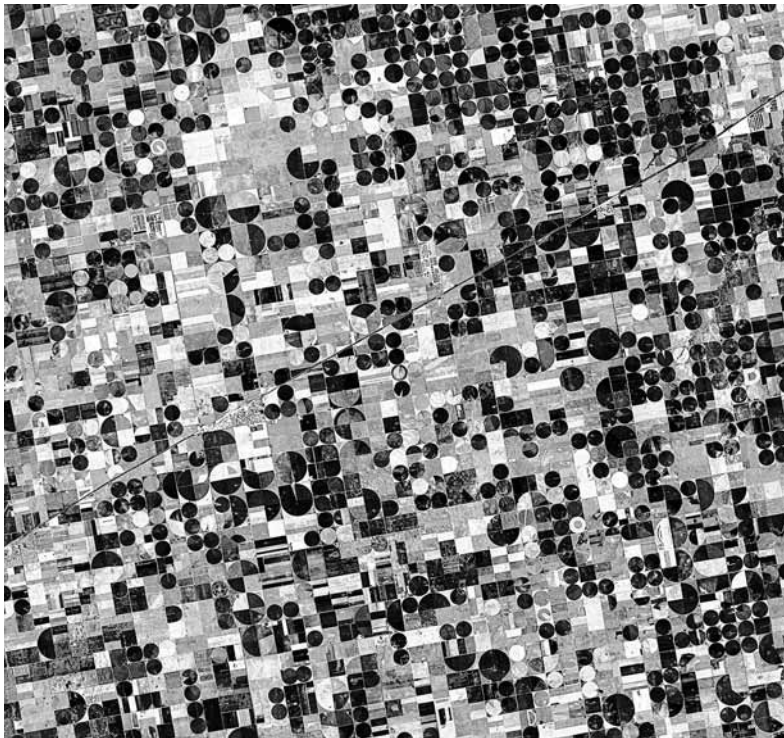


FIGURE 1.1. Satellite photography of pivot irrigation on roughly 720 square miles near Garden City, Kansas. Liquidation of the Oglaia aquifer sets up one of many supply shocks awaiting future generations. Credit: NASA Earth Observatory



FIGURE 1.2. Pivot irrigation in the Wadi As-Sirhan Basin of Saudi Arabia, February 21, 2012. Fields in active use appear darker, fallow fields are lighter. Most are approximately one kilometer in diameter. As in Kansas, the water is pumped from underground. Credit: NASA Earth Observatory



FIGURE 1.3. Tar sands mining operations north of Fort McMurray, Alberta, Canada. Credit: George Wuerthner



FIGURE 2.1. Energy and agricultural sectors side by side at Xi'an, capital of Shaanxi province, China. Credit: David Klotz



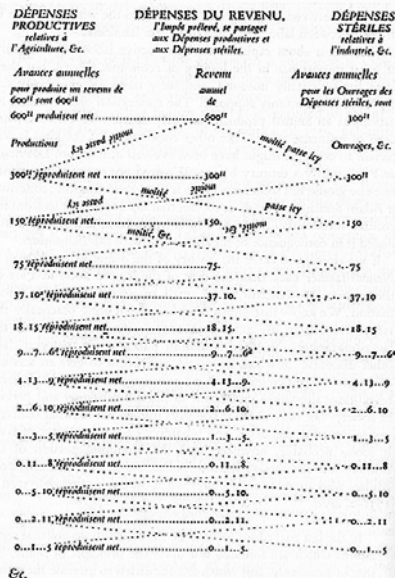
FIGURE 2.2. Refining, manufacturing and transportation sectors meet along the Chesapeake Bay near Baltimore, Maryland. Chesapeake Bay was once the most productive estuarine system in North America. Credit: IAN Image Library



FIGURE 2.3. Federal Reserve headquarters in Washington, DC, (*top*) and the New York Stock Exchange trading floor (*bottom*)—power centers where GDP trends are closely monitored. Credits: (*top*) Dan Smith; (*below*) Ryan Lawler



Tableau Économique
 Objets à considérer, 1°. Trois sortes de dépenses; 2°. leur source; 3°. leurs avances; 4°. leur distribution; 5°. leurs effets; 6°. leur reproduction; 7°. leurs rapports entr'elles; 8°. leurs rapports avec la population; 9°. avec l'Agriculture; 10°. avec l'Industrie; 11°. avec le commerce; 12°. avec la masse des richesses d'une Nation.



REPRODUIT TOTAL..... 600 li de revenu; de plus, les frais annuels de 600 li
 et les intérêts des avances primitives du Laboureur, de 300 li que la terre restitue.
 Ainsi la reproduction est de 1500 li compris le revenu de 600 li qui est la base du
 calcul, abstraction faite de l'impôt prélevé, et des avances qu'exige sa reproduction
 annuelle. Etc. Vasez l'Exhibition à la base suivante

FIGURE 3.1. François Quesnay (left) and a page from the *Tableau Économique* (right). Quesnay could have used the simpler concept of trophic levels (Chapter 7, especially Figure 7.2) to describe the profound importance of agriculture in economic affairs.

Credits: Wikimedia Commons; Wikimedia Commons

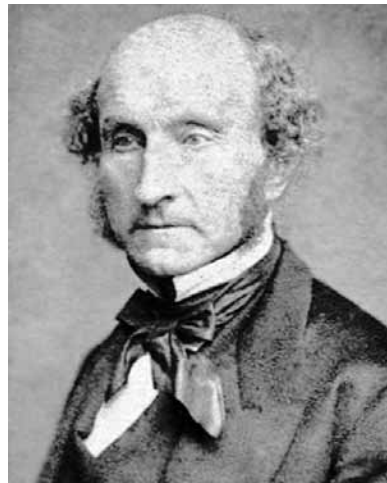


FIGURE 3.2. Scenes from the Industrial Revolution, such as “Coalbrookdale by Night” (above, depicted by Philip James de Loutherbourg in 1801) accompanied the “dismal science” of Thomas Malthus (below left) and other classical economists. John Stuart Mill (below right) called for the “stationary state”—not in cultural affairs but in levels of economic activity. Credits: (above) The Yorck Project: 10.000 Meisterwerke der Malerei; (below left): Wikimedia Commons (public domain); (below right) John Watkins (public domain)

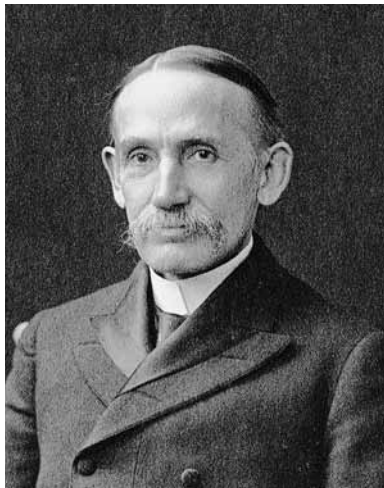


FIGURE 4.1. Henry George, author of *Progress and Poverty*, and John Bates Clark, early American practitioner of neoclassical economics. George and Clark debated the nature of land as a factor of production, with massive amounts of wealth at stake. Credits: (left) Robert Schalkenbach; (right) Columbia University

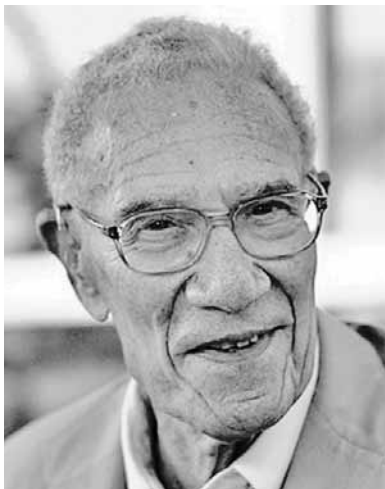


FIGURE 5.1. Robert Solow (*above left*) and Paul Romer (*above right*): economists representing the development of neoclassical growth theory. Their findings, far removed from ecological insight, served “pop economists” such as business professor Julian Simon (*below left*), and pro-growth politicians such as Jack Kemp (*below right*). Credits: (*top left*) Olaf Storbeck; (*top right*) Wikimedia Commons; (*bottom left*) University of Maryland; (*bottom right*) US Department of Housing and Urban Development

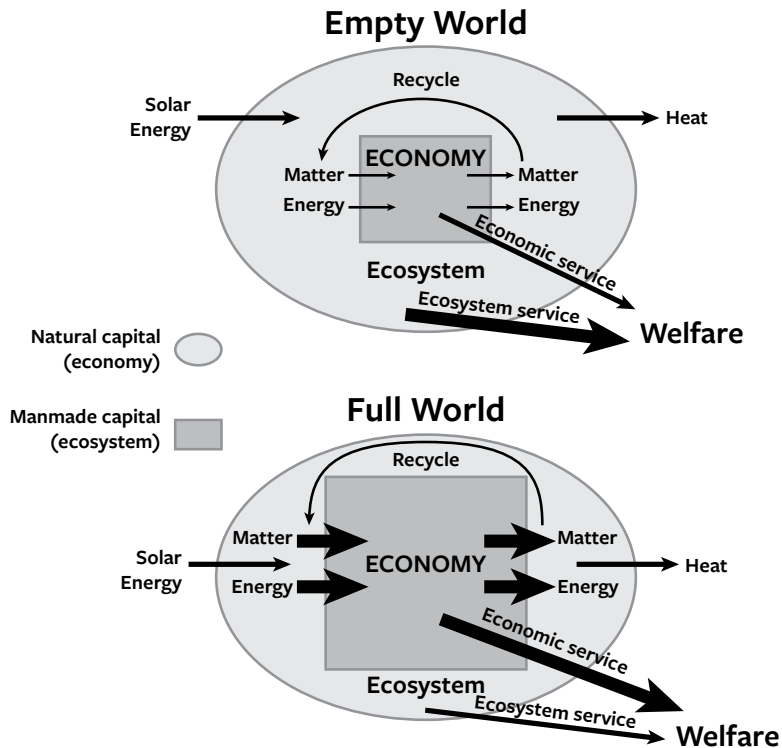
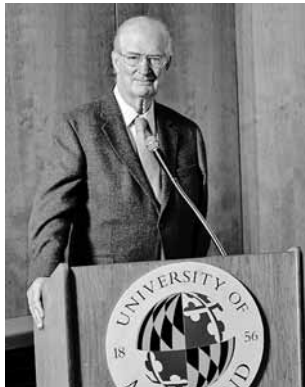


FIGURE 6.1. Herman Daly (*top left*) and Donella “Dana” Meadows (*top right*), founders of ecological economics. Daly and colleagues clarified the relationship between the economy and Earth with a diagram (*above*) that was simple but powerful for illustrating limits to growth. Credits: (*top left*) Herman Daly; (*top right*) Donella Meadows Institute; (*above*) From *Ecological Economics*, Herman E. Daly and Joshua Farley, ©2004 Herman E. Daly and Joshua Farley. Reproduced by permission of Island Press



FIGURE 6.2. Mountaintop removal for coal encroaches on one of the few remaining homes in what was the town of Mud, in Lincoln County, West Virginia. Credits: Vivian Stockman and Ohio Valley Environmental Coalition (ohvec.org)

Economy of Nature

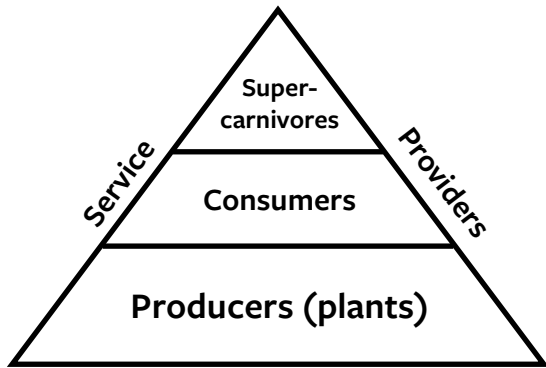


FIGURE 7.1. Trophic levels in the economy of nature. Service providers interact throughout all levels.

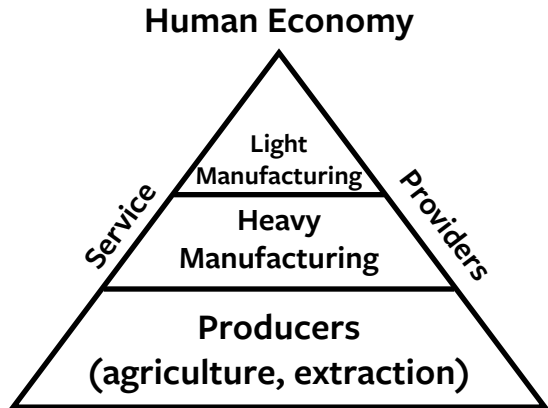


FIGURE 7.2. Trophic levels in the human economy. Service providers interact throughout all levels. Not shown is the foundation of “natural capital” that is farmed and extracted.

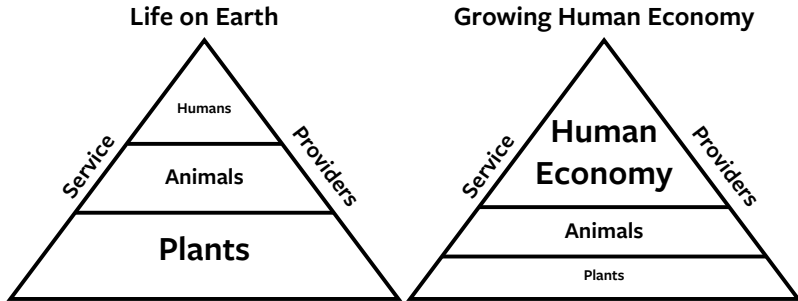


FIGURE 7.3. Trophic levels of all life on earth (*left*), making it plain to see the effect of a growing human economy—real and monetary sectors—on other species (*right*).

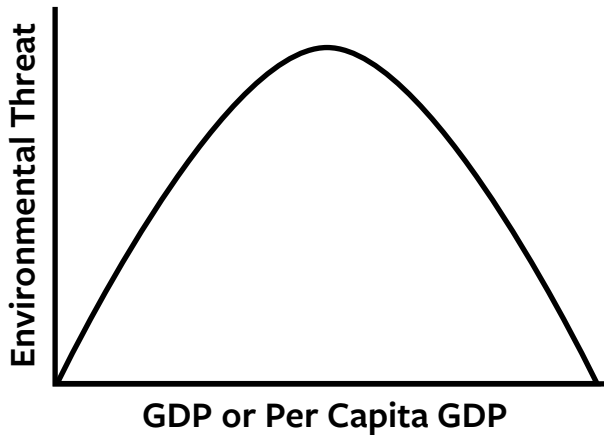


FIGURE 8.1. Environmental Kuznets curve: a grain of truth embedded in a fallacy.



FIGURE 8.2. Clearcut near Corvallis, Oregon, generating money for “green” expenditures elsewhere. Credit: Alexey Voinov

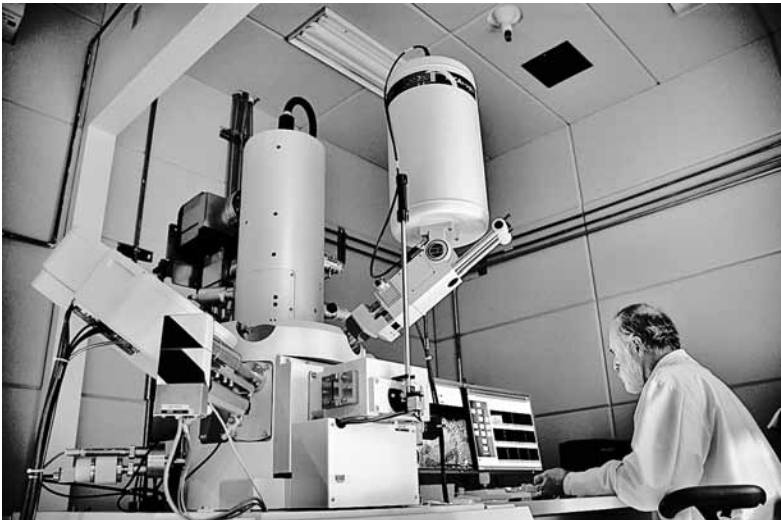


FIGURE 8.3. Research and development: the key to technological progress and economic growth. A scientist conducting basic research at Idaho National Laboratory. Credit: Idaho National Laboratory



FIGURE 8.4. R&D has a direct and obvious environmental impact, as with the Ames Research Center at Moffett Field, California. Less obvious is that R&D requires a far bigger ecological footprint, dispersed throughout the planet, to generate the money to fund expensive R&D facilities and programs. Credit: NASA

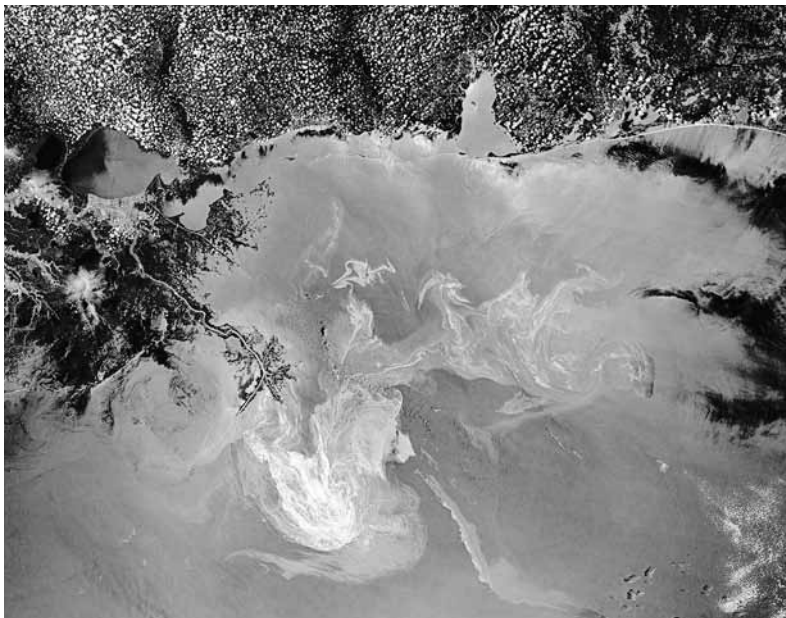


FIGURE 8.5. Oil from the Deepwater Horizon spill approaching New Orleans, Louisiana, May 24, 2010. The oil appears light in color because it smooths the ocean surface. The Louisiana coast is also vulnerable to sea-level rise, exacerbated by land subsidence (due primarily to natural gas, oil and water withdrawal). Credit: NASA



FIGURE 9.1. The problem of uneconomic growth in the United States started to come into focus in the 1960s. John F. Kennedy (*left*) questioned his appointees and bureaucrats with, “What have you done for growth today?” By 1968, Robert F. Kennedy (*right*) warned against using GDP as a metric of social success. Credits: (*left*) Abbie Rowe, National Park Service; (*right*) *U.S. News and World Report*



FIGURE 10.1. Hummers H3, H1 and H2 (*above, left to right*) and “McMansion” (*below*): symbols of conspicuous consumption and heavy ecological footprints in the USA. Credits: (*top*) Wikimedia Commons; (*bottom*) David Klotz

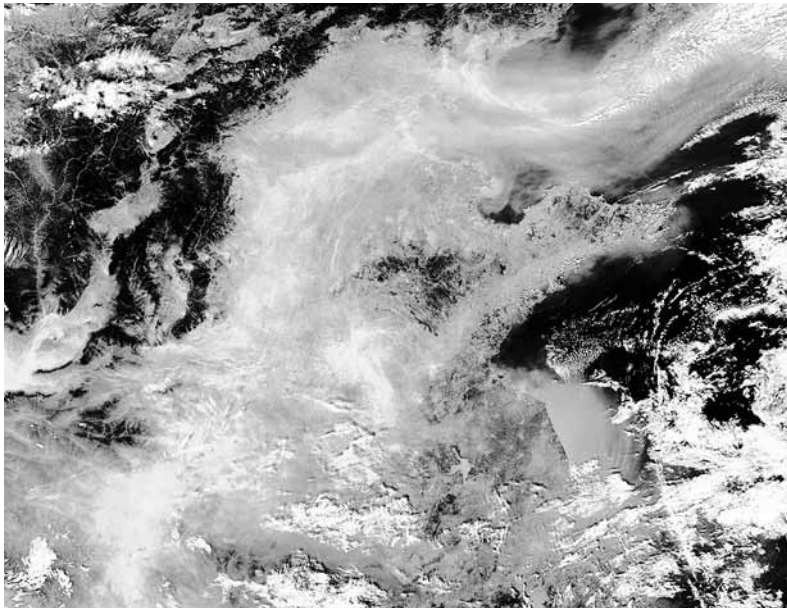


FIGURE 11.1. Dust and haze over the Yellow Sea and eastern region of China, inland to Beijing in the North, October 20, 2012. The Chinese leadership has acknowledged the conflict between economic growth and environmental protection. Credit: NASA Earth Observatory

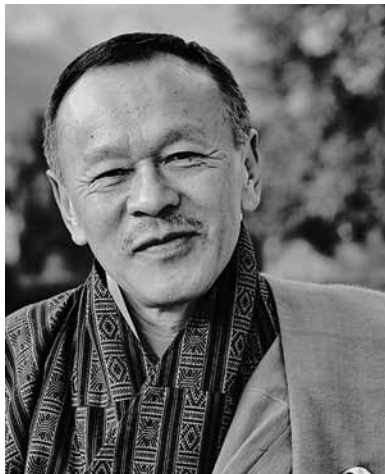


FIGURE 11.2. Precedents of steady statesmanship have been well-received in international affairs. The popular King of Thailand, Bhumibol Adulyadej (*left*) calls for the Sufficiency Economy, while Jigmi Y. Thinley, Prime Minister of Bhutan (*right*) advances Gross National Happiness, eschewing the conventional goal of GDP growth. Credits: (*left*) Government of Thailand; (*right*) Royal Government of Bhutan



FIGURE 11.3. Dubai, geographic icon of the liquidating class, at night.

Credit: NASA Earth Observatory

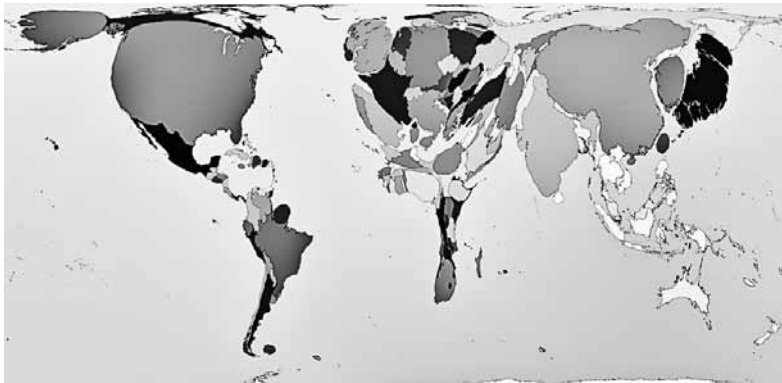


FIGURE 11.4. An ecological footprint map of nations (*top*) and the UN Economic and Social Council Chamber, a promising venue for steady statesmanship. Credits: (*top*) SASI Group (University of Sheffield) and Mark Newman (University of Michigan); (*bottom*) Mark Garten

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