

A flaw indeed! Still, one has to wonder. Now that Greenspan's core beliefs have been so rudely unmasked, will he change? Would average citizens change? Or would we be paralyzed by fear and uncertainty? Raj Patel, author of *The Value of Nothing*, holds the latter view. He believes "it would be too big a shock to have the fundamentals of policy in both government and the economy proved wrong, and to have nothing with which to replace them."

### Another Way? Five Exit Ramps

To address this dilemma — the desire to change paralyzed by the fear of change — we set out in the balance of the chapter some key concepts and strategies that can help us SEE our world and our place in it afresh: strengthening our resilience, reclaiming the commons, reinventing democracy, constructing a social solidarity economy, and putting a price on the services nature provides to humans so we might awaken to the real costs of our current profligacy. Think of them as "exit ramps" from the crumbling economic ideology of the industrial age that will take us to the more fruitful and effective paths of a steady-state economy. We will refer to them throughout the book as we examine what is possible when we muster the courage and the confidence to face reality head on.

### Resilience: Strengthening Our Capacity to Adapt

In science, resilience is defined as "the amount of change a system can undergo (its capacity to absorb disturbance) and essentially retain the same functions, structure and feedbacks." For nearly four decades, scientists have been studying the resilience of ecosystems. The degradation of ecosystems by human-induced stresses became more evident over this time and really took off as a field of study after the publication of *Panarchy*, by Lance Gunderson and Buzz Holling, in 2001. Interest in and research into resilience applications to the social-economic-ecological challenges we face have exploded across the globe since then.

When the first global ecosystem assessment was completed (the Millennium EcoSystem Assessment in 2005), it found that 60 percent of the planet's ecosystems were being degraded or used unsustainably. These findings dramatically illustrate the importance of restoring and maintaining resilience. Degraded ecosystems reach a critical threshold or "tipping point," at which point they may rapidly and dramatically change. Life-giving services are lost in the process — fresh water or air quality, for example, or the natural capacity to sustain fisheries, regulate climate, and control pests.

Our treatment of natural resources as a commodity for profit with little reference to the implications for ecosystem health is responsible for the growing risk that tipping points will be reached. When we maximize yields

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at the lowest cost — whether the crop is timber from the forest or soil-damaging monocultures of grains or vegetables; whether we are emptying aquifers by “mining” water or burning coal to produce cheap electricity — our singular interest in production and narrow definition of productivity are out of sync with nature.

The study of resilience in ecosystems has revealed how the activities of human beings are now so dominant across the landscape that ecosystem health cannot be discussed without reference to our species. Resilience scientists talk about social-ecological systems, suggesting that the well-being of both are inextricably linked and interdependent. Resilience principles are also increasingly being used to examine human systems and organizations, the theory being that if we are to restore ecological resilience, we need to align our way of living within the boundaries of nature. These ideas feed a rapidly growing field of scholarship focused on determining how we might do this in communities and regions as well as entire sectors of the economy, such as finance and public services. Given the challenges we face, it seems a timely field of enquiry.

Throughout this book we use seven key resilience principles as a lens through which to examine a wide range of innovations relevant to navigating the transition to a steady-state economy. Living as we do in a context where human vulnerability to multiple stresses is increasing, it is more important than ever to strengthen community resilience. Our capacity to both mitigate and adapt to the disruptive implications of climate change, peak oil, and ecosystem decline ultimately depends on it. As Thomas Homer-Dixon wrote in *The Upside of Down*, “If we want to thrive, we need to move from a growth imperative to a resilience imperative.” Economic growth “must not be at the expense of the overarching principle of resilience, so needed for any coming transformation of human civilization.”

The seven principles of resilience that guide our reflections in this book are set out here and in Figure 1.6.

- *Diversity: A resilient world would promote and sustain diversity in all forms (biological, landscape, social, and economic).* Diversity is a major source of future options and thus of a system’s capacity to respond to change and disturbance in different ways. Resilient systems would celebrate and encourage diversity. They would both offset and complement the current trend toward homogenizing the world. They would encourage multiple uses of land and other resources.
- *Modularity: A resilient world would be made up of components that can operate and be modified independently of the rest.* In resilient systems,

everything is not necessarily connected to everything else. Overly connected systems are susceptible to shocks that are rapidly transmitted throughout the system. The recent global financial crisis is an excellent example. The modularity of a resilient system enables it to mitigate or absorb the repercussions of disaster.

- *Social Capital: A resilient world would promote trust, well-developed social networks, and leadership.* The resilience of social-ecological systems is rooted in the capacity of people to respond effectively to challenges together, not singly. In other words, trust, strong networks, and leadership are critically important.
- *Innovation: A resilient world would place an emphasis on learning, experimentation, locally developed rules, and embracing change.* Resisting change is counterproductive in a resilient system. Instead, by offering help to those who are willing to change, the system fosters innovation. When events begin to erode rigid connections and behaviors, innovation opens up new opportunities and resources for creative adaptation.
- *Overlap: A resilient world would have institutions whose governing structures include "redundancy." It would also have a mix of overlapping common and private property rights, increasing access to land.* Redundancy in institutions increases the diversity of responses possible in the face of disturbance and crisis. As a result, overall flexibility and the effectiveness of adaptation increase. By contrast, top-down, centralized, "efficient" structures with no redundancy tend to fail when faced with change outside the scope of their mandate. In short, messy is better than streamlined. Similarly, exclusive private property rights are at the heart of many strategies of resource use. Resilience increases when wider access and a mix of common and private property rights compromise this exclusivity.
- *Tight Feedback Loops: A resilient world would possess tight feedback loops (but not too tight).* Feedback loops refer to the communication flow within a system. Information about the impact of a particular process or event is returned to the system to enable it to correct itself next time. Resilience in a social-ecological system is characterized by focused effort to maintain, or tighten, the strength of feedbacks. They allow us to detect thresholds before we cross them.
- *Ecosystem Services: A resilient world would consider and assess all the ecosystem services that the market economy currently disregards.* The market economy does not price services emanating from the earth and its ecosystems (e.g., pollination, water purification, nutrient



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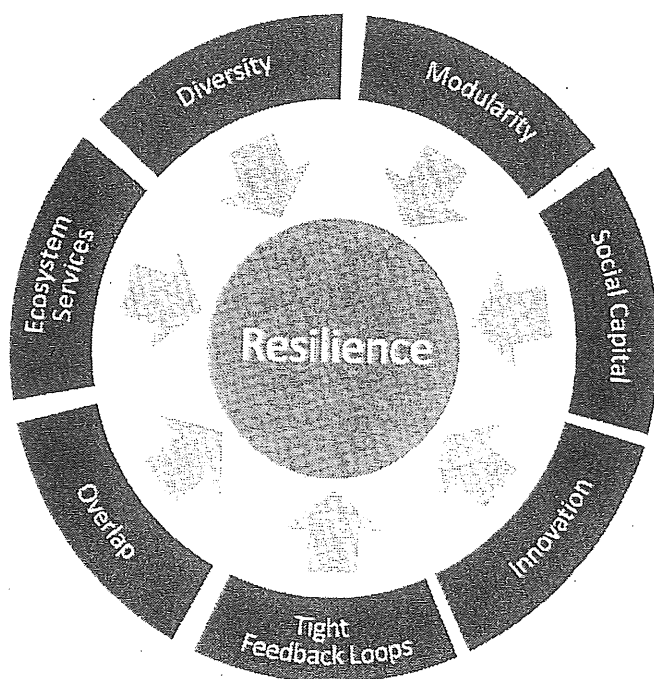


Fig. 1.6:  
Seven principles of  
resilience.

cycling, and many others identified in the Millennium Ecosystem Assessment). These ecosystems are therefore not valued within the narrow cost-benefit analysis characteristic of resource development. Such pricing is critical in order to estimate cumulative impacts on different scales and time horizons, and to assess the effect that a development will have on the integrity of ecosystem services.

Reflection on these principles of resilience yields the following four broad strategies we need to take seriously as we SEEK pathways to a low-carbon, steady-state economy.

STOP!

### **Reclaiming the Commons**

When one looks far back into human history, private property and commercial markets rarely existed. Where they did, they were of marginal importance to the everyday functioning of human beings. Historically, the "commons" were the lands and waters that provided people in their vicinity with the means of living. The rules and norms that have regulated access to and use of the commons, their management, and the sharing of surplus have differed from time to time and place to place across the globe. Indeed, they still differ today in those places where commons continue to exist.

As is revealed in the next chapter, the enclosure of the commons — or in plain language, the privatization of what was once the domain of