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# The Upside of Down: Catastrophe, Creativity, and the Renewal of Civilization by Thomas F. Homer-Dixon, Island Press

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# Book Review

## The Upside of Down:

### Catastrophe, Creativity, and the Renewal of Civilization

*by Thomas F. Homer-Dixon, Island Press*

*Reviewed by Jennifer M. Rohleder**

The world is facing a convergence of numerous social, economic, and environmental problems, and many say that it is the first time in human history that this has happened on such a scale. Yet history, particularly the rise and fall of previous civilizations, may help us understand what is coming, and how to handle it so that we do not risk the fall of the human civilization. In *The Upside of Down: Catastrophe, Creativity, and the Renewal of Civilization*, author Thomas F. Homer-Dixon looks to the Roman Empire to examine what will likely happen when society breaks down under the weight of the problems we face, and to learn how to prevent the collapse of our civilization. The pervasive issue of climate change is the key example used throughout the book.

The author compares the buildup of societal stresses to the tectonic stresses in the Earth's crust. "Breakdown is often like an earthquake: it's caused by the slow accumulation of deep and largely unseen pressures beneath the surface of our day-to-day affairs. At some point these pressures release their accumulated energy with catastrophic effect, creating shock waves that pulverize our habitual and often rigid ways of doing things." The author identifies five tectonic stresses that he believes are accumulating beneath the surface of our societies: population stress, energy stress, environmental stress, climate stress, and economic stress. The author presents an in-depth survey of each of the stresses he identified that can cause civilization change, and documents how each of the stresses interact and combine to produce far wider effects than any one stress could cause individually.

- *Population Stress.* Currently, humankind is in the process of transitioning from a system of high birthrates and death rates to low birthrates and death rates, as seen in most modern industrial societies. Although birthrates have declined sharply in many rich and even some poorer countries, the steady population growth in most poor countries will more than compensate for it. The author warns that the key issue is that by the year 2050, while the population of rich countries will be almost the same as it is today (around 1.2 billion), the population of poor countries will have surged from about 5.3 billion to 7.8 billion, further straining already inadequate resources.
- *Energy Stress.* The author considers energy as society's critical resource as it has enabled human societies to sustain complex social order and maintain steady improvements to our quality of life. Homer-Dixon explains facing declining energy returns on investment ("EROI"), since new deposits of our critical fossil fuels are more difficult to find, and are located in areas more difficult to reach and costly to extract. Declining EROI means higher prices, and as price surges continue to recur, tensions will escalate over access to critical oil supplies.
- *Environmental Stress.* The author presents the view that environmental crisis is engulfing the entire planet despite statistics showing that people's lives are generally improving, with longer average life expectancy, more food availability, and lower infant mortality. The author contends that these statistics provide false comfort. Although in the short-term humans can continue to generate wealth by using nature's capital, eventually, when nature's capital nears exhaustion, overstressed ecosystems will lose their resilience and suddenly collapse.
- *Climate Stress.* Homer-Dixon feels that abrupt warming is likely because the Earth's climate is an extremely complex

*The author presents the view that an environmental crisis is engulfing the entire planet.*

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system with the potential of containing a number of stable states. Although it can be difficult to shift such a complex system from one equilibrium state to another, when the shift does occur, it can happen abruptly and unexpectedly. The author acknowledges that warming could produce benefits, however the author contends that harmful outcomes will be far more common and serious, particularly for poor countries that cannot easily adapt to changing environmental patterns.

- *Economic Stress*. Economic instability can generate frustration, resentment, and anger that can, under the right conditions, tear countries apart. The author addresses the income gap between rich and poor countries as creating an inequality of opportunity, which in turn produces discontent and social instability.

Although each of these stresses individually can raise the risk of social breakdown, Homer-Dixon warns that it is the convergence of these stresses that pose the greatest threat by making breakdown both more likely and rapid. The upside of all of these dire predictions is that the author believes that breakdown is not necessarily a bad thing. With breakdown comes the opportunity for the creative renewal of technologies, institutions, and societies in the absence of a rigid bureaucracy. The author terms this type of breakdown "catagenesis," and emphasizes that this is the type of breakdown management for which we should strive when the inevitable social earthquakes occur.

To achieve catagenesis rather than catastrophe, Homer-Dixon counsels that we must as a society become comfortable with change so that we can use imagination in adapting to new circumstances, rather than blindly trying to maintain the status quo. We must develop integrated, rather than compartmentalized, solutions by bringing together experts of many different fields to develop proactive policies. Finally, we must value resilience over efficiency with regards to our vital goods supply, like energy and food. A distributed supply of our critical infrastructure needs will provide society with a margin for error that can handle supply disruptions.

*Resilience and flexibility are the key characteristics for ensuring that a society can adapt to change.*

According to the author, resilience and flexibility are the key characteristics for ensuring that a society can adapt to change and bounce back from breakdown. Despite the author's prolific examples of doomsday scenarios that arise from the accumulation of the various stressors, the author is optimistic that we, as a society, can choose among the plausible futures that are shaping in front of us. The challenge will be overcoming the tendency to try and preserve the status quo, and instead adapt to and thrive in a world of constant change.