

## Book Review

Thomas Homer-Dixon

*The Upside of Down: Catastrophe: Creativity and the Renewal of Civilization.*

Toronto: Alfred A. Knopf, 2006.

Reviewed by Ed Weick

The possibility of an apocalypse, an event so large and overwhelming that it could destroy society and perhaps all of humankind, has been on our minds as long as we have had minds. There may be good reasons. Since our beginnings many thousands of years ago, we have experienced everything the four horsemen of the Biblical apocalypse could throw at us – pestilence, war, famine and death, not to mention earthquakes, tidal waves and volcanic eruptions.

Professor Thomas Homer-Dixon, currently George Ignatieff Chair in Peace and Conflict Studies at the University of Toronto is one of the world's leading authorities on environmental security and social adaptation to complex stress. The findings of his groundbreaking research have been widely used by top security and foreign policy agencies in Canada and the United States, including the U.S. State Department, the CIA, and the National Security Council. Homer-Dixon has received U of T's Northrop Frye teaching award and the Governor General's award for non-fiction for his best-seller, *The Ingenuity Gap*, which deals with an apocalypse that is multi-sourced and slow, one that has been grinding away at us over the years, decades and even centuries. He refers to its various elements as “tectonic stresses” which arise from global population growth; growing energy deficiencies; environmental factors such as worsening damage to our land, water, forests, and fisheries; climate stress following from changes in the makeup of our atmosphere; and economic stress resulting from instabilities in the global economic system and the ever-widening income gaps between rich and poor people.

In *The Upside of Down*, he adds *multipliers*, which give the stresses extra force and make breakdown more likely, widespread and severe. One multiplier is the rising developmental speed and global connectivity of our activities, technologies, and societies. Another is the escalating power of small terror groups to destroy infrastructure and people.

Aiding and abetting the five tectonic stresses are other processes. Drawing on work by Joseph Tainter, Homer-Dixon argues that, as the complexity of societies grows, the application of solutions to emerging problems becomes less and less productive, eventually declining to a point where there is no positive payoff. He notes that, because of its complexity, the modern world has become a place of “tightly coupled systems”, meaning that if one component fails, a whole system can shut down. Drawing on work on "Panarchy Theory" by ecologist Crawford Hollings, Homer-Dixon proposes that the world consists of higher and lower "adaptive systems" and suggests that we are somewhere in the middle all such systems. Changing global climate affects us on a mega-scale, while the plants and animals we depend on and the microbes that can make life miserable for us affect us on a lower scale. These systems grow and decline and what phase

they are in can greatly affect other systems, including our own. They are related in dynamic ways, meaning that they can combine to produce positive or negative synergies, with either good or bad results. Basic to all such processes are uncertainties, unpredictabilities and what one might call “traps”, the idea being that once a society is embarked on a certain path, getting off of it may be extremely difficult if not impossible.

Denial is basic to coping with the various stresses. Homer-Dixon notes that “Aided and abetted by politicians, commentators, and so-called experts who are often only too willing to tell us what we want to hear. We use, I believe, a range of strategies to convince ourselves that the problems we face aren't terribly serious, that our future will look more or less like our past, and that the road in front of us – beyond the fog – is straight and clear.” In other words, we continually lie to ourselves because it makes us feel good despite how bad things have become.

As a general comment, the book is well written and very readable. Once you are into it, it is difficult to put down. However, it is essentially gloomy and tends to take you down with it. A question you must ask yourself as you go through it is whether it actually and realistically reflects the world we live in. In my opinion, it does. Another question is whether we really can do much about the precarious situation we're in. Homer-Dixon points directions we might try, but it doesn't work for me. He uses the rise and fall of Rome as an analogy to where our civilization may be, but he does not mention that the collapse of Rome was followed by more than a thousand years of darkness and medievalism. Will that happen to us too?

### ***Energy***

Among his sources of stress, Homer-Dixon puts the strongest emphasis on energy. He illustrates its importance by extensive references to the Roman Empire, proposing that it was not constant barbarian invasions that caused the western empire to disintegrate. The invasions were only “the most immediate cause”. Borrowing from Taintner, Homer-Dixon argues that the real problem was the rising complexity of all parts of Roman society – “including its bureaucracy, military forces, cities, economy, and laws – as the empire tried to maintain itself.” To support all of this, the empire needed continually increasing amounts of energy. Eventually, the burden on peasants and arable lands became too great, while rising complexity strangled the empire's ability to renew itself. “The collapse that followed was dramatic: populations of cities and towns fell sharply, interregional trade dwindled, banditry and piracy soared, construction of monumental buildings and large-scale infrastructure stopped, and virtually all institutions – from governments to armies became vastly simpler in their operation and organization.”

A key concept used to understand the relationship of energy to how societies rise and fall is “energy return on investment” (EROI). As a society grows, expands territorially and becomes more complex, increasing amounts of energy are required to sustain it. Initially, the energy is relatively easy to obtain, but there comes a time when the value of the energy needed to obtain additional energy exceeds the value of the additional energy. Homer-Dixon argues that this happened to Rome and was a paramount factor in that empire's decline. We cannot fully know if much the same thing is happening to our world now, but there are some strong indications that it is.

Our civilization is built largely on a single type of energy – fossil-based hydrocarbons in either solid (coal), liquid or gaseous form. From its beginning in the 18<sup>th</sup> century, our use of fossil

energy has grown exponentially, leading to a huge rise in industrial output, population and, at least in the developed world, total income and income per capita. How long can this last? At some time, not long from now, available fossil energy will have peaked. It will then decline rapidly, and the vast industrial and social infrastructure which has developed around it will decline with it. "...energy will become far more costly as non-conventional and renewable sources replace cheap oil. The price rise won't be steady and linear: we'll see sharp spikes and dips as the global economy tries to adjust." With regard to the chaos that will result: "In coming years... foreshocks are likely to become larger and more frequent..." including "...threshold events- like climate flips, large jumps in energy prices, boundary-crossing outbreaks of new infectious disease, or international financial crises. In poor countries where environmental, population, and economic stresses are already severe and social capacity to manage them remains low, we'll probably see a steady increase in outbreaks of civil violence – including riots, insurgency, guerrilla war, ethnic cleansing, and terrorism."

After the chaos, we may be into another dark age, like the one depicted in Cormac McCarthy's Pulitzer Prize winning novel "The Road", where a father and son try to find their way through a dark, desolate and perilous post-apocalyptic landscape.

### ***Population and the Global Economic System***

On the issue of population growth, one can only wish that Homer-Dixon had taken matters several steps further. I see it as being of at least equal importance to the energy question. Advances in modern medicine and sanitation, and industrialization made possible by fossil energy, have fueled and are continuing to fuel large-scale population growth. United Nations population data indicate that global population grew from some 2.5 billion people in 1950 to 6 billion people in 2000. It is expected to continue to grow to some 9 billion people by 2050. The UN numbers also show that we are at a point in history where the rural/urban population split is approximately 50:50; that is, as many people now live in urban areas as in the countryside. Urban population dominance will continue to grow and the UN predicts that by 2030 more than 60% of the world's population will live in cities, mostly in vast slums.

This is as far as Homer-Dixon takes population issues. He might have gone much further. For example, UN estimates indicate that the population of one continent, Africa, has already shown and will continue to show remarkable growth over the century that began in 1950 and will end in 2050. In 1950, Africa held 8.95% of the global population. The UN estimates that by 2050 it will hold 21.3%. The Latin America and Caribbean region is also expected to grow, though less rapidly. The proportion of global population in other continents, essentially the rich world, will decline considerably.

The population of Africa could rise from 224 million in 1950 to nearly 2 billion by 2050. Its 2005 population was already slightly over 900 million, with some 700 million living on the impoverished lands of Sub-Saharan Africa. As population continues to grow, corresponding economic growth is improbable. Africans are already trying to escape poverty by illicitly migrating to Europe, a trend which is likely to become much larger. During the next few decades, then, a major international problem and - perhaps *the* major international problem – will be stemming the mass migration of people from the poverty of the poor world to the relative abundance of the rich world. Much of the growing population of Latin America will also

continue to look for opportunities in the United States, and increasingly in Canada. What may result is a long term game of erecting barriers by rich countries and the bridging of those barriers by refugees from poverty.

That something needs to be done to stem the potential tide of African migrants has now become obvious. Africa needs to be made livable. It has remained mired in poverty for many reasons related to colonialism, corruption and international trade practices which favour agricultural producers in the rich world, and set up barriers to producers in the poor world. Foreign aid to poor African countries has been both disappointing in volume and had disappointing results on the ground. In a recent report, Canada's Senate Committee on International Affairs and Trade noted that, since its inception in 1968, the Canadian International Development Agency (CIDA) has spent \$12.4 billion in bilateral assistance to sub-Saharan Africa, but that it "... is ineffective, costly, and overly bureaucratic." All too often, foreign aid becomes "phantom aid", payments to the high priced consultants of the donor country, with no appreciable effect on the ground.

On the global economic system, Homer-Dixon challenges the assumption handed down to us by classical economists that the capitalist market will somehow operate in stable equilibrium. He illustrates that it is unlikely do so by references to the 1997 currency crisis which began in Thailand and spread rapidly through the financial world, and concludes that today "...the international financial system resembles a huge, crowded theater that's vulnerable to fire. The people in the theater – currency speculators, bankers, and investors of all stripes – control trillions of dollars of highly liquid capital. Because of new communication technologies, any warnings of danger – of, say, weakness in a particular developing country's economy – travel through the audience in a flash. ... This is crowd psychology on steroids. Even if there's no fire in the first place, panic can create its own justification by devastating a fundamentally sound economy." Using World Bank statistics, he notes the growing per capita income disparity between the rich world and the poor, concluding that the disparity will continue to widen "for decades, probably for centuries." As another issue, Homer-Dixon makes the rather time-worn point that capitalist growth is based on consumerism. "Our psychological state is comparable to that of drug addicts needing a fix: buying things doesn't really make us happy, except perhaps for a moment after the purchase. But we do it over and over anyway." Why? There are many reasons. "But a central and often overlooked one, I think, is that consumerism helps anesthetize us against the dread produced by empty lives – lives that modern capitalism and consumerism have themselves helped empty of meaning."

### ***The Environment and Climate Change***

With regard to environmental damage, Homer-Dixon allows that rich countries, having come through their own periods of ugly industrialization, have now found solutions to some of their visible, national and local environmental problems. Nevertheless, because of increasing affluence and a growing international footprint, their negative impact on the global environment continues to grow. They consume and produce more waste on a total and per capita basis. Their wastes include pumping more CO<sub>2</sub> into the atmosphere, a major factor in global warming. They practice a self-delusional denial. "It's as if those of us living in rich countries have intentionally pushed our environmental impact beyond the horizon, so we can't see it anymore. Sometimes we do this quite literally: our environmental regulations encourage dirty industries to move to other parts of the planet, often to poor countries with weaker regulations and governments."

With respect to global warming, Homer-Dixon argues that the management of our greenhouse-gas emissions will require "...a host of astonishingly difficult transitions in the next couple of decades..." including a revamping of "... everything from our cars to our methods of making concrete and growing rice." This will require "...a vast superstructure of scientific, monitoring, financing, and enforcement mechanisms that spans the globe and affects every person and organization's life." This superstructure will need to be put in place quickly because "our emissions are now soaring, they will affect our environment for centuries (so every year we delay we're locking in more environmental damage in the future), and it looks as if Earth's climate is already changing fast."

A problem to which Homer-Dixon does not give sufficient attention is that the world is still divided into self-serving jurisdictions that may have made some sense historically, but make little sense now. Problems tend to be global, but solutions are mostly cast in national terms. But not only are they national, they tend to serve particular interests within nations. Much depends on who holds power and to what ends. This was recently illustrated by events at the recent G8 summit held at Heiligendamm, Germany. Recognizing that the Kyoto Protocol has failed, the summit was supposed to find a solution to the global problem of carbon emissions. It avoided doing that. Instead, it agreed to give serious consideration to cutting in half worldwide greenhouse gas emissions by 2050, with each major polluter deciding by itself how this would be done. One has to have an enormous faith in politicians to see this as anything but a clear recipe for failure.

### ***Where do we go from here?***

Having lodged us in a gloomy world, Homer-Dixon tries his best to get us out of it with the concept of catagenesis, "... a collapse or breakdown to a simpler form, but ...the birth of something new, unexpected, and potentially good." He does not succeed. As in Cormac McCarthy's novel, we are left wandering through a desolate landscape. Well, maybe not: "Efforts at management are often important..." but the "... alternative approach I advocate requires us to adopt what I've termed a prospective mind. We need to be comfortable with constant change, radical surprise, and even breakdown, because these are now inevitable features of our world, and we must constantly anticipate a wide variety of futures. With a prospective mind we'll be better able to turn surprise and breakdown, when they happen, to our advantage." Sorry, Professor Homer-Dixon, these are nice thoughts, but I still feel as though I'm wandering through that desolate landscape and that, like Western civilization after the fall of Rome, I may be doing it for a thousand years.

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