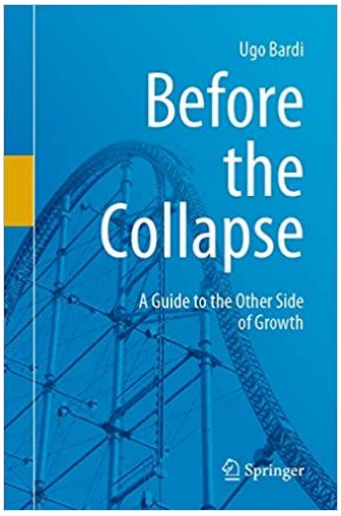
“Collapse. Then Rebound?”

A Review by Dick Burkhart of

“Before the Collapse:

A Guide to the Other Side of Growth”

By Ugo Bardi (2020)



Taking a civilizational point of view, Professor Ugo Bardi (Florence, Italy) introduces us to the 6 stages of collapse, based on many historical examples and some modest complexity theory. It begins with the aphorism of the Roman Stoic philosopher Seneca that “growth is slow but ruin is rapid”. However, after a civilization has fallen off the “Seneca Cliff” there is typically a rebound. What will the “Seneca Rebound” look like this time, or will the collapse be total?

The book has an easy-going conversational style, organized around these 6 stages: (1) Collapse is Not a Bug - it is a Feature (“The Seneca Effect”); (2) Collapse is Rapid (the Seneca Cliff); (3) Collapse is Often Unexpected (the Seneca Peak); (4) Collapse is Bad for You (the Seneca Bottleneck); (5) There is Life after the Collapse (the Seneca Rebound); (6) Resisting Collapse is Not a Good Idea (the Seneca Strategy) (pp 241-242).

Bardi starts off by emphasizing that predicting the future is like Russian Roulette – very risky business indeed. In other words, take global climate modeling with a very large grain of salt – at least when it comes to the detailed predictions like sea level rise by 2100. Instead look at the fundamentals of our fossil fuel driven civilization, which demonstrate that we are in a state of ecological “overshoot”.

We can’t predict the strength or timing of all the feedback loops, or how they will interact with each other, but both history and complexity theory suggests we’ll hit some nasty tipping points. We may be there already, in fact, and we’ll have to make do somehow or other. Brute force resistance (“Drill, Baby, Drill”) will only increase the overshoot and steepen the cliff. Instead, “Go with the Flow”. That is, try to figure out what is going on, then nudge it in the right direction – to lessen or soften the fall or prepare for a future rebound.

Scientifically, the best way to predict the future is not to construct traditional statistical models, but to develop diverse scenarios, based on large scale, nonlinear

relationships among a few aggregate variables with key unknown parameters which are perturbed to produce the scenarios. The famous limits-to-growth studies of the 1970s are a prime example, and they clearly shown the Seneca Cliff for most scenarios. But optimistic group-think often carries the day until it is too late.

Perhaps the simplest way to think about the causes of collapse is Bardi's observation that "Most civilizations in history seem to arise from the availability of some abundant and cheap natural resource" (p 154). That's why, personally, the first thing I do to assess the state of the global economy and its future is to study oil – especially the actual reserves and the costs of extracting, processing, and distributing them. We're already past the peak production of conventional oil and have been moving rapidly toward more expensive secondary sources like shale oil, tar sands, deep sea, and polar. The consequence has been a slowing of global economic growth.

As these secondary sources are also depleted, with increasing costs of production despite the latest technology, growth will flatten even more and the world will enter a new regime of uncertainty, both economically and politically, with spreading conflicts and escalating risk of collapse if we don't get our act together. As Bardi notes, "We're already seeing evident symptoms of the breakdown of the social fabric in the West in the increased political polarization" (p 157). "The cultural change that awaits the West will be enormous and radical" (p 158). Politically speaking, people seem to "have only two modes of operation – complacency and panic", according to John Schlesinger. "The switch to panic may start small and there is evidence that it is, indeed, starting" (p 159).

Instead "We need to increase by a factor of about 50 the amount of energy invested in creating a new energy infrastructure" (p 181). That is, a Green New Deal would just be a start – the real thing would be far more economically, and therefore politically, disruptive, and we're not there yet. "In politics magic always wins against reality – but only for a while" (p 202). So, how have plants created a sustainable ecology for themselves on planet earth? "(1) Use only what is abundant, (2) Use as little as possible, and (3) Recycle ferociously" (p 204).

Humanity's record doesn't even compare: "Human beings are so good at exploiting resources that we tend to destroy them" (p 205), even ones that should be renewable. Put another way, "An economy based on greed will always create needs that the Earth will not be able to satisfy". Then the further humanity exceeds the Earth's carrying capacity, the bigger the risk of a "crash into the ground", so bad that the system is no longer able "to rebuild itself" (p 206).

Meanwhile we delude ourselves, thinking that simple practices, such as "drinking your coke without using a plastic straw", will make a difference. In practice this often just frees up resources for a less conscientious person, a version of the Jevons' paradox. Thus collective action is needed, but what? The limits-to-

growth simulations provide 3 focal points for governance at all levels, from local to global: (1) Slow the exploitation of natural resources, (2) Slow population growth, and (3) Reduce pollution. But how?

In a complex system, the key is to find critical or sensitive vectors which governments can easily adjust to achieve big effects on the system. In practice, this often means incentives or disincentives achieved by regulations, taxes or subsidies, penalties or rewards, accompanied by education and mitigation as needed. No magic here but sometimes very hard politics – typically, "a politician who implements laws that require citizens to make sacrifices to reduce their consumption is not re-elected" (p 216). And authoritarian leaders are not doing any better. Does there exist a recent historical model of governance of a sustainable economy?

Bardi says, yes, that Edo Japan, the "Tokugawa" period of Shoguns, from 1603 to 1868 was such a period. The population stabilized, with an equally stable economy, with modest growth facilitated by a lack of disruptions. The latter came from a peaceful and isolationist foreign and trade policy, together with "strict control over all sectors of Japanese society" based on the principle that "the nail that sticks out gets hammered down" (p 219). Commerce, craftsmanship, literacy, and refined arts flourished, but the modest middle class lived simply in a self-contained or "circular" economy characterized by sustainable forestry and agriculture. There was no "tragedy of the commons" due to "a tangle of rules, customs, cultural practices, and collective goodwill" (p 221).

The lesson? – "It is not impossible to attain sustainability, especially because it is unavoidable" (p 221), at least if there is a critical mass of survivors. And in this case, history brings good news. Bardi calls it the "Seneca Rebound" after a collapse: "a society, state, or organization can restart growing after a collapse at a faster speed than before the collapse" (p 223). The reason is simply that, eventually, "depopulation frees up resources that can be exploited for a new phase of rapid growth" (p 225). Yet "Would that be really possible in a world badly depleted in terms of mineral resources and subject to extensive ecosystem damage?" (p 227)

Bardi sees little hope from fossil fuels since even today "it is possible to maintain production only by means of extremely sophisticated technologies and large inputs of financial and human capital". And "The situation is even more dire for nuclear energy" (p 227). He reminds us that "the current reactors – there are about 500 of them – are all at risk of meltdown, a collective disaster with almost unimaginable consequences" (p 229) - think Fukushima.

However, Bardi offers more optimism about renewables, such as solar panels, windmills, and hydroelectric plants. "Most of the materials used in renewable plant can be recycled and these technologies need little or no rare minerals". And he

points out that “our descendants would have large amounts of minerals already extracted that they could salvage from the ruins of our civilization” (p 230).

Personally, I’m skeptical that modern technologies for renewables could be maintained after a thorough collapse of the global economy and the consequent massive die-off of humanity. But Bardi does not consider the possibility of a series of partial collapses and rebounds, with each partial collapse providing the historical space for transitioning to simplifying technologies and practices. This could be a more feasible path toward a sustainable global civilization. John Michael Greer sees historical precedents for this in his book “The Long Descent”, which he elaborates into a theory of “catabolic collapse”.