

PART I: OUR CONVERGING CRISES

Collapse

Historians have long noted that civilizations appear to pass through cycles of expansion and decline. There have been an estimated 15,000 human **cultures**, defined by distinct languages and customs. **Civilizations**, on the other hand, are quite rare—there have been only about 24 of them that we know of. Civilizations are organized around cities, and they usually develop writing, money, and social hierarchies, along with monumental architecture. When reading about ancient civilizations like the Sumerians, the Egyptians, the Romans, and the Mayans, it's natural to wonder why they failed after achieving so much.

Jared Diamond, in his 2005 book *Collapse*, identifies five factors that appear to contribute to the collapse of civilizations:

- natural climate change,
- human-caused environmental damage,
- hostile neighbors,
- loss of support from trading partners, and
- failure to adapt to environmental issues.

But other researchers have wondered if there is a deeper, underlying dynamic to the collapse process.

The great twentieth century historian Arnold Toynbee, in his 12-volume *A Study of History* (published in 1961), theorized that all civilizations pass through five stages:

- genesis,
- growth,
- time of troubles,

- universal state, and
- disintegration.

He speculated that societies fail to solve new problems because they have invested so much effort in building elaborate structures for solving old problems.

Archaeologist Joseph Tainter, in his book *The Collapse of Complex Societies* (published in 1988), went further, tying collapse to the idea of **diminishing returns**. His thesis can be summarized as follows:

- human societies are problem-solving organizations;
- sociopolitical systems require energy for their maintenance;
- increased complexity carries with it increased energy costs per capita; and
- investment in sociopolitical complexity as a problem-solving response is subject to the law of diminishing returns. So over time the society has to invest more and more, but gets less and less benefit. Eventually problems pile up to the point where they're overwhelming.

Collapse can therefore be understood as a loss of the energy needed to maintain social complexity.

Ecologist Charles Hall and political scientist Thomas Homer-Dixon have pointed out that all societies rely on energy profitability: energy has to be invested into sowing crops and tending domesticated animals, which we humans then gain food energy by eating. But at the end of the day more energy has to be returned than was spent if society is to be sustainable. Most energy production activities are subject to the law of diminishing returns; for example, as soils deplete it takes more effort to produce the same size crop. Falling returns on the energy invested in energy production is a deep, often overlooked cause of societal decline.

Ecologist Peter Turchin and historian Sergey Nefedov have contributed some of the most recent, and in some ways the most thorough research into

the study of cycles of growth and decay in civilizations. In their 2009 book ***Secular Cycles***, they carefully examine records in four well-documented, pre-industrial, agrarian societies during the past thousand years. They see population growth and carrying capacity as ultimately the most critical issues in these societies' periodic expansion and contraction. However, they conclude that sociopolitical factors, such as the form of government, can also affect the specific trajectories that societies take. Turchin's and Nefedov's historical survey suggests the average expansion-contraction cycle played out in about 300 years, with the following four phases:

First, expansion: Population increases, taxes are low, political systems are stable, basic food prices are low, and wages are high. Then, *stagflation:* Population growth slows. Higher taxes are needed to support a growing elite class, and there is low but increasing political instability. Basic food prices rise, real wages for most workers decline, and debt increases. Urbanization also increases. Then there comes a *crisis*. The population declines from the peak-- typically by disease or by deaths from warfare. Income inequality is high, political instability rises to a peak, and basic food prices are high but very unstable. Urbanization remains high, the tax system is in crisis, and the lower classes rebel. And, then finally, *depression/intercycle:* The population has declined to a lower level. There are attempts to restore the state, while economic inequality declines. Basic food prices decline but remain unstable.

Energy writer Gail Tverberg observes that for the United States, a cycle such as this may have begun around the year 1800, with its expansion phase lasting until around 1970, when the country experienced energy crises and entered a period of high inflation and wage stagnation. According to Turchin and Nefedev, stagnation phases usually last 50 to 70 years; if Tverberg is correct, then the United States may be near the end of its stagnation phase and on the verge of a cyclical crisis.

Financial systems also seem to be subject to cycles. Anthropologist David Graeber has argued that **debt** was an integral feature of trade, even in early societies. Further, as economist Hyman Minsky has pointed out, debt--especially with interest--tends to accumulate to unrepayable levels, resulting in economic cycles that start with exuberant expansions and end in deflationary depressions.

Many authors who study collapse speculate that our civilization may be vulnerable to the same factors that resulted in the decline of earlier ones—including the buildup of debt, declining energy profitability (in our case due to fossil fuel depletion), and climate change. However, ours is the first truly **global civilization**, and the first to have serious global environmental impacts, including a mass extinction of species. Therefore, unless we're able to make a rapid switch to non-fossil fuel energy sources, the result may be a far more severe collapse than that addressed in any of the theories we've just surveyed.

This is certainly a fearful prospect, but it need not be a paralyzing one. If the chances of both ecological collapse and global civilizational collapse this century are significantly above zero, then we should explore what strategies could both reduce the likelihood and severity of collapse, and permit the best possible outcomes for all. These strategies and possible outcomes are the subject of the remainder of this video series.