



The Collapse of Complex Societies

Joseph Tainter, 1988

Originally published in 1988, Joseph Tainter's *The Collapse of Complex Societies* remains, nearly thirty years later, one of the definitive works on the collapse of civilisation. It's often cited in conjunction with Jared Diamond's more succinctly-titled *Collapse*.

Tainter avoids the term 'civilisation' as a non-scientific value judgement, and prefers the term 'complex society'. This is an example of two of the qualities that give Tainter's work its special merit: his care for language, and his logic.

In a classic application of the scholarly method, Tainter reviews and criticises the compendious literature on the subject. He then proposes a new and, he argues, better

hypothesis. He also shows, as he is required to do, that his chosen subject is 'non-trivial.'

As Tainter points out, the interest in collapse is stimulated partly by the fall of Rome, but also by contemporary events. If civilisation has collapsed once, it can collapse again. *'To some historians of the early twentieth century the twilight of Rome seemed almost a page of contemporary history.'*

As a scholar and a scientist, Tainter defines collapse. He insists that it is a political process, and that it is *'...a general process that is not restricted to any type of society or level of complexity'*. Tainter's general definition of collapse works well in the context of this study: *'A society has collapsed when it displays a rapid, significant loss of an established level of sociopolitical complexity.'* It is about process as well as outcome.

Tainter pursues a general explanation. One of his objections to the theories current at the time that he wrote is that they are *ad hoc*. He also feels that they are simply inadequate as theories. *'... [they] have suffered in common from a number of conceptual and logical failings'*.

Tainter provides an overview of instances of collapse. The general reader will be aware of the Minoan civilisation, the Mycenaeans, the Western Roman Empire, Mesopotamia and the Lowland Classic Maya. It is historians who are more likely to have heard of the Harappan civilisation or the Hittites. Other examples - such as the Chacoans of the Southwest desert, the Hopewell culture of the Northeast and the Midwest, the Huari and Tiahuanaco empires of pre-Inca Peru - would tend to be known rather to anthropologists and archaeologists. One of the incidental benefits of this book for some readers, I think, would be in providing pointers to unfamiliar aspects of ancient history and prehistory that they might wish to explore.

Tainter accepts that the picture in popular fiction and films of life after the collapse of

industrial civilisation contains elements that are known historically from collapses in the past. He instances the breakdown of authority and law, squatting, a loss of population and a regression to local self-sufficiency. The possibility would be, as Tainter points out, catastrophic.

Tainter, as a scientist and a scholar, defines complex society. He points out that complexity, historically, is an anomaly. Most societies have been small, simple and kinship based. Complex societies are unequal and heterogeneous. Many of the characteristics of complex societies are in fact features of states: these would include such things as a concern with territorial integrity, and with maintaining legitimacy. Tainter discusses, and rejects, the idea of a 'Great Divide' between states and non-state societies. Societies which are not fully fledged states can be quite complex.

Tainter discusses the evolution of complex societies. There have been a number of theories. Tainter gives six examples of 'primary' states, those which have evolved independently: Mesopotamia, Egypt, China, Indus River Valley, Mexico and Peru. Bruce Trigger, in *Understanding Early Civilisation*, also cites Benin. In this discussion Tainter emphasises that states are problem-solving organisations. It is a reminder that it is difficult to understand the later history of states without identifying the problem they were originally intended to solve.

Tainter describes and analyses the literature of collapse in detail. This is the heart of his criticism of earlier theories. He is very thorough. He identifies eleven separate theories. These include resource depletion, catastrophe, invaders, mysticism and economics. Of these Tainter has most time for economics. These explanations are, in his eyes, logically preferable as they describe specific mechanisms or formulate a causal chain. Economic theories of collapse are thus open to criticism and can be tested and revised.

Catastrophe is one of the most popular explanations of collapse. Tainter sees it as among

the weakest. Catastrophe theories invoke earthquakes in the Caribbean, volcanic eruptions in the Aegean and malaria or plague in Rome. The logical difficulty is that complex societies quite often experience catastrophe, and routinely - according to Tainter - do so without collapsing. As Tainter says: *'It is doubtful if any large society has ever succumbed to a single-event catastrophe'*.

Invaders are another very popular explanation. The Harappan civilisation, apparently, was destroyed by Aryans with chariots. Mesopotamia was overwhelmed by Gutians, Amorites and Elamites. The Hittites were brought down by the Sea Peoples. The Minoans were overrun by the Mycenaeans, and the Mycenaeans in turn were destroyed by the Dorian branch of the Greeks.

Tainter's criticism is that a recurrent event, collapse, is here being explained by a random variable. The overthrow of a dominant state by a weaker people is not an explanation. If it does occur, it is a phenomenon which needs in itself to be explained. Tainter also points out that there is remarkably little archaeological evidence.

Tainter has great fun with the mystical explanations. There have been records of mystical explanations of collapse ever since there were civilisations to collapse and other civilisations to record them. They include 'decadence', Christianity, the disappearance of great men and the abandonment of ancient manners. Tainter dismisses them for their reliance on analogies with biological growth, their use of value judgements and their reliance on intangibles. In Tainter's opinion, Oswald Spengler, the author of *The Decline of the West*, which had a powerful impact in Europe in the 20s and 30s, was 'supremely mystical'.

Tainter's new theory is at the heart of the book. To develop a general explanation Tainter draws on a concept from economics, that of 'marginal productivity' or 'marginal return on investment'. Marginal cost, or marginal investment, means an increase expenditure or investment beyond the current level. Economists and cost accountants are very well aware

that as expenditure and investment are increased, the marginal productivity - the output that results from extra investment - will decline. Eventually it will decline to nothing.

Tainter sees human societies as requiring investment and expenditure for their maintenance. Society has costs. Complex societies, he argues - and this I think is entirely reasonable - have greater costs *per capita*. Tainter's thesis is that the benefits of investment in complexity characteristically, not occasionally, reach a point where they begin to decline. It is an elegant, not to say a sophisticated, point of view.

Tainter cites a number of instances. He asserts that farming, when it began, was a response to population growth. Many pre-historians would disagree with that. The origins of farming are quite difficult to explain. They would however almost to a man agree with his assertion that the marginal return on subsistence agriculture declines with every additional unit of labour that is added.

Tainter also uses the example of fuel. He points out that a 'rationally-acting human population' first uses the reserves that are easiest, and cheapest, to exploit. When it is necessary to use less easily-obtained resources, productivity automatically declines.

More sophisticated examples are the declining productivity of R & D and education. The decreasing effectiveness of R & D is very well documented. Tainter's arguments for the declining productivity of increasing participation in education, and extending the years of education, are quite startling.

Tainter believes that additional costs will increasingly be seen as bringing no benefit to the population. Complexity will increasingly be perceived as a burden. Sections of society will resist, or attempt to break away.

Technological innovation, in Tainter's eyes, is unusual in human history. The best way of

maintaining growth and complexity is to find a new what he calls an 'energy subsidy' such as fossil fuels or nuclear energy, or - more traditionally - territorial expansion.

Having set up his theory, Tainter is now obliged to show that it is helpful in understanding collapse in particular cases. To do so, he analyses in detail three historical instances of collapse; the Western Roman Empire, the Classic Maya of the Southern Lowlands, and the Chacoan society of the American Southwest. The Chacoans are the people sometimes known as the Anasazi. According to Wikipedia, contemporary Pueblans do not like the latter term, and do not want it to be used.

The main costs of the Western Roman Empire were the army and the civil service. Under the Republic, the empire was self-financing. Conquests paid for themselves, in plunder, and more than paid for themselves. It was possible to reduce the tax liabilities of the citizenry quite dramatically.

Augustus, the first Emperor, terminated the policy of expansion. Trajan attempted foreign wars. Most Emperors followed Augustus policy. Without the loot of successful foreign wars, the imperial exchequer was hard pressed to meet the expenses of the state. Nero, in 64 A.D., debased the coinage. It was a stratagem that future emperors frequently resorted to. Plague, wars with Germanic tribes and inflation weakened the Empire. In the third century the Empire nearly broke up.

Diocletian (284-305) created an authoritarian regime designed to ensure the survival of the state. Government was large and the military was increased in size. There was coercion, conscription and regulation. The costs fell on a depleted population. Agricultural land was abandoned, further reducing the tax base and the revenue. In 476, the last Emperor was deposed by a Germanic king.

As Tainter says, '*... the [Classic] Maya [of the Southern Lowlands] are ... a people whose*

greatest mystery is their abrupt departure from the stage of world history....' The Southern Lowlands society collapsed between 790 and 890 A.D. While the Mayans had a script, which is increasingly well understood, much remains to be deciphered. The evidence of archaeology is therefore very important in understanding Mayan collapse.

As Maya civilisation evolved, there was a shift to more intensive agriculture, accompanied by deforestation. Fortifications were erected. The monumental public buildings, for which the ruins of the Maya cities are justly celebrated, were put up. There was social differentiation. Mayan civilisation was costly in human labour. The Mayan cities competed amongst themselves for increasingly scarce resources.

Collapse was swift. Complexity disappeared. Temples were neither built nor maintained. Stelae were no longer erected. Luxury items disappeared. Writing stopped. There was a major loss of population. As Tainter says, the nature of the final 'push' is not clear. That is important. What is clear is that the costs of complexity fell entirely on the agricultural population, and could no longer be sustained. There may in fact have been a short-term gain for the peasants - the surviving peasants, at least - when the cities fell.

'Chacoan society of the San Juan Basin of north-western New Mexico...' had no writing. It *'...is known only from its archaeological remains.'* The region is arid, and surrounded by mountains. Chaco Canyon is its main feature. The canyon is *'... an island of topographic relief and environmental variety....'* Its main advantage is tributary drainage. However the soil is poor, and the growing seasons are short. There is little permanent water. Drought is common.

It is a marginal environment. Around 900 A.D. complex regional system developed, designed to even out fluctuations in agricultural productivity. There is no parallel in this area of America in prehistoric times.

The distinctive attribute of Chacoan society is the 'Great Houses'. They were large, and connected by roads. They had several hundred rooms, on multiple storeys, with elaborate masonry. The rooms were large and high-ceilinged with timber roofs. The Great Houses have a large number of storage rooms relative to their size. Their residents were people of higher status, while the bulk of the population lived in small pueblos.

The population grew to several thousand. Marginal land was cultivated. Building stopped in 1132 A.D. *'By mid-to-late twelfth, or early thirteenth, century the Chacoan system had essentially collapsed.... After 1300 A.D. the region was essentially abandoned by agricultural peoples.'* The system had become costly and there were decreasing returns. The outlying Great Houses withdrew from the network. A severe, prolonged drought from 1134 to 1181 may have been the 'final blow'.

All these three cases show that the costs of complexity increased. In the Maya Lowlands and Chaco Canyon there was a late surge of building. In the Western Roman Empire, it was the expansion of the army and the increase in size of the bureaucracy that imposed the costs. The population of all three societies, at the end, was declining or stagnant. In the case of the Mayans and the Chacoans, the abandonment of territory suggests environmental degradation.

Tainter says that collapse can be economical and rational. Simpler forms of organisation can be cheaper and more productive. He also points out that there is likely to be a considerable loss of population. The historical evidence is that those who survive are likely to be directly engaged in agricultural production. That has implications for a modern recurrence.

Tainter accepts that there is no 'formal, quantitative test' for his theory. Even in the relatively well-documented case of the Western Roman Empire, there is insufficient data. The theory does, however, appear to have explanatory value. Apart from anything else, it enables one historical case of collapse to be compared with another. I am not aware how

widely it has been accepted in anthropology, archaeology and ancient history.

What gives me pause is that in cases like the Southern Lowland Maya and the Chacoans we do not know what was the 'final push' or the 'final blow'. Without that, any evaluation of the theory must remain provisional.

This is one of the definitive treatments of a very important historical process, which many think is critically important to contemporary society. It impresses, above all its other merits, by its remorseless logic.

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