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In these days of hyper-specialization, Civilisations: Collapse and Regeneration is a volume delightful in its breadth. Spanning topics from farthest pre-history to 20th century developments and the establishment of Czechoslovakia, covering archaeology, history, and natural sciences, the compilation has something for everyone. If your interests concern the distant past, the present, or anything in between, Civilisations will reward the time you spend with it.

Prof. Joseph A. Tainter
Utah State University
Author of *The Collapse of Complex Societies*

Bárta and Kovář have brought together the best and brightest of Czech minds in the historical sciences to contemplate the age old question of why do civilizations collapse and how do they respond to such trauma. Situated at the cross-roads of Europe with few natural defences, the geography of the Czech Republic has dictated the country's own socio-economic evolutionary history and this resonates in how these twenty-eight researchers view their own pre-history and history from the Upper Palaeolithic to World War II to the Soviet invasion of August, 1968. However, these researchers go further and address issues of civilizational collapse well beyond their borders in ancient Egypt and China, the Middle Ages, and up to the present in post-September 11 USA. Together, these chapters bring fresh insights into civilization collapse and response that will be of interest not only to scholars, but to policy makers who are looking into the future and its wide range of possibilities.

Thomas E. Levy
Distinguished Professor, UC San Diego



CIVILISATIONS: COLLAPSE AND REGENERATION

Miroslav Bárta
and Martin Kovář (eds.)



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CIVILISATIONS: COLLAPSE AND REGENERATION



Addressing the Nature of Change
and Transformation in History

Miroslav Bárta and Martin Kovář (eds.)

The present volume is dedicated to the phenomenon of collapse as reflected through different kinds of historical and environmental evidence. A total of twenty-eight in-depth studies provides a heterogenous analyses of the collapse and regeneration processes in societies and civilisations separated in space and in time. The individual chapters vary in their locations, characteristics and age. They contribute invaluable observations, both general and specific, concerning the fluctuation of complexity within human history and its consequences for respective societies developing in different contexts – focusing on their inner processes or their ability (or failure) to adapt to environmental dynamics. The outcome may be surprising to some readers as most contributions clearly demonstrate many universal features that connect mankind regardless of its variables such as attained technological stage, degree of complexity or external factors such as climate change. It is hoped that the present book may serve not only as a textbook about our common past but also as a source of inspiration for how we view the world and its possible futures.

Civilisations: Collapse and Regeneration
Addressing the Nature of Change and Transformation in History

Miroslav Bárta and Martin Kovář (eds.)

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burials, natural shrines and a beaker ideology linked to growing social differentiation and, possibly, a new cult. The collapse of the tradition of collective values started unfolding in the middle of the 5th millennium BCE. A marked change – or even collapse of traditional values – did not occur however until the beginning of the 3rd millennium BCE. Hence the changes that took place stemmed mainly from the development of social relations and the transformations of the cosmology of Later Stone Age agricultural communities.

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ANTIQUITY

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from systems failures to invasion, from climate change to the inexorable heavy hand of geological misfortune. The following account is a snapshot view of Minoan Crete's development and achievements and the forces which led to its collapse.

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The *Heraclitus Law* describes a mechanism according to which the factors responsible for the rise of a particular civilisation or culture are usually the same as those which, in the end, instigate its crisis, meaning thus a quick and deep loss of its complexity, usually followed by a stage of regeneration and a following rise. Therefore, if we want to understand why a system is exposed to a crisis, it is necessary to analyse the stage

during which the civilisation or culture was emerging. It is there, if the factors involved in its rise are identified, that we usually find the key to understanding the actual stage of the crisis.

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As late as the 1760s the Spanish colonial empire was one of the largest world empires of all times, at least by land area. The economic decrepitude of the metropolis, its inability to avail itself of the economic possibilities extended by the colonies, and the political development in the Atlantic area at the end of the 18th century then sparked off an independence movement in the Spanish overseas territories, which in 1826 resulted in the collapse of the empire.

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Over the course of almost four centuries the Battle of White Mountain

(8 November 1620) turned into a symbolic milestone of Czech history and became rated as a national catastrophe or a return of the Czech Lands to the bosom of the Catholic Church. It is from this angle that national tradition and often also professional historiography evaluate both the prelude to the battle (the Czech Uprising of the Estates against the Habsburgs in 1618-1620) and the long-term preconditions leading to the crushing defeat of the Czech Estates. The current paper is an attempt to capture the White Mountain turn in history from the point of view of the drastic nature of the change, of long-term accumulation of inner tension (political, social, ideological and religious) in the Czech Lands, gradated external pressure (international policy, financial and military) and also from the point of view of the impossibility of return to the previous state of affairs after 1620. The collapse symbolised by White Mountain thus brought far-reaching and complex changes of Czech society, changes of a kind that made it impossible to later restore the classical state ruled by the Estates.

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Allah created the world and will bring it to an end at a time only He knows. Both this general belief and the real experience of their own societies make the Muslims view their history as a course towards a climax, which was attained in the revelation sent to Muhammad and in his accomplishments. Afterwards, however, followed a gradual decline. Our paper gives a survey of interpretations offered by Western and by Muslim scholars to explain the undeniable decline and stagnation of the world of Islam after the glorious period of its rise and expansion. Our account is focused on the roots of decay perceptible in the social and cultural life, especially in the Ottoman Empire. Thereafter, a detailed analysis is given to modern discussions. Attention is paid to a variety of efforts to restore the erstwhile vigour and respect in the world as well as to opposite violent trend to bring about a final apocalyptic clash, such as manifested in the ideology and practice of the “Islamic State”.

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The Ottoman Empire was founded on the traditions of Islamic universalism, the Turkish military fief system and Iranian bureaucracy. The first phase of the crisis of the Ottoman Empire in the 16th to 18th century was characterised by the decline of the classical model and, in consequence, military defeats of the Ottoman sultan by

the European Great Powers. In the 19th century, the Ottoman Empire entered the second phase of the crisis, which it tried to overcome by modernisation modelled on the European example. However, the pressure applied by the European Great Powers under the diplomacy of the Eastern Question impeded the modernisation process; the involvement of the Turks on the side of Imperial Germany during the Great War led to the definite demise of the Ottoman Empire.

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The paper’s objective was to prove that although the fall of Austria-Hungary only happened due to its war adventure, which started in the summer of 1914, serious existential crises had been weakening the multinational monarchy for decades earlier. The relative political repose in Austria factually ended with the resignation of the Count Taaffe’s long-term government in 1893; since then, the “old Austria” was heading – more or less obviously – towards its fall. With regard to the “starting position” of the Czech national movement 100 years earlier, the foundation of the sovereign Czechoslovakia in the fall of 1918 seemed a “small miracle”. In reality, its foundation was a result of the fact that the Czech national polity program had not been implemented in Austria-Hungary even after decades of trying; the world war then completely stopped it: considering what happened with Austria after the war started, neither the Czechs, nor the Slovaks, or members of other nations could expect that the victory of the monarchy would enable them to carry out their national aspirations. This resulted into the above-mentioned foundation of the independent Czechoslovakia and other so called “successor states” in Central Europe.

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The peace organization that arose after World War I is traditionally denounced as a short-sighted Diktat that knocked defeated Germany to its knees. One of the main reasons for the Nazis’ ascension to power and the start of World War II is often seen in the supposed exaggerated harshness of the so-called Versailles Peace System. This study indicates that historiography refuted such a claim upon the discovery of archives. In reality, the Versailles System could have been a functioning foundation for the peaceful reconciliation of international relations. Its main problem was not an exaggerated harshness, but the inability of Germany to admit its military defeat.

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This article is an overview of the origins and causes of wars focused primarily in the twentieth century. The main elements of analysis are related to the philosophical and ideological motivations, as well as by structural changes in industrial societies in technology. The article tries to analyze whether the idea of progress and war have had a relationship in the perception of armed conflicts during the twentieth century. Finally, ideas and concepts that, from a political point of view, were important in the magnitude and increased war, especially until 1945, will be searched.

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The goal of this study has been to consider the causes and circumstances surrounding the fall of the British Empire and whether the Imperium Britannicum could have, in some modified version, survived, and potentially, for what amount of time. The result of this consideration is that the effective collapse of the Empire, which the British public came to accept in connection with Indian and Pakistani independence in 1947, and especially with the Suez Crisis in 1956, was already beginning at the close of the World War I, not to mention that most of the symptoms of the crisis could already be observed at the turn of the 19th century. The deciding factors were economic. The war that Great Britain led from 1914–1918 was beyond its means, and this applies even more so to the war from 1939–1945. The island nation was a victor at the war’s end, however, the price that it paid for this triumph was terrible: complete economic exhaustion, financial, military, and political dependence on the USA, and – finally – the collapse of the Empire. With regard to the circumstances that accompanied the collapse of the colonial empires of other European states, the Brits managed the complicated situation rather well; the sentiment for “the good old times”, felt, and to some extent still observed in today’s modern British society cannot change this.

21. Michal Pullmann

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Eastern Europe 591

This contribution analyses the collapse of the Communist regimes from three perspectives – economic-political, socio-historic, and cultural. According to the central argument, the primary integrative ties of

the state socialist system were weakening and gradually falling apart during the later phase of Communism: the Communist ideological rhetoric, the homogeneity of society, and the ability to reach economic effectiveness and political unification. The unsolved problems culminated in the mid-eighties: Gorbachev made an attempt at systemic change with perestroika and glasnost; however, this attempt did not lead to the revival that Gorbachev had hoped for, but instead to the collapse of the entire system.

22. Jiří Ellinger

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The analysis of the position of the United States after September 11, 2001 points to the arguable degree of success of America’s response to the unprecedented terrorist attacks of 9/11, which together with the financial and economic crisis of 2008 have created the impression that the United States is finding itself in a deep crisis and that its global influence has been dwindling to give room to newly emerging powers. The current debate among leading American experts provides the material for this research into the question about whether the United States (marked by many as a present-day empire) is truly in a critical initial phase of decline and whether there are any useful historical analogies to its current situation as well the question about what the new 21st century global order might be.

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23. Jan Kozák

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The first part of the article introduces, discusses and compares two basic categories of collapses – those of natural origin and collapses due to anthropogenic causes. In the second part the reader is presented with a gallery of commented images – engravings depicting the world’s largest natural disasters (seismic and volcanic) spanning a period from the 13th until the end of the 19th century, which document and illustrate both the advancement in Earth sciences and the development of the global civilisation today. The brief conclusion describes the current state.

24. Petr Pokorný

***When Processes Meet Events: Late Holocene Degradation And the Collapse of Temperate Forest Ecosystems* 685**

This chapter aims to show that collapse dynamics can be a part of natural processes at landscape level as well. To illustrate this phenomenon, we chose an example of the transformation of forest communities in prehistory. During 2nd millennium BC, productive, nutrient-rich broadleaf deciduous forests, which formed at the end of the Older Holocene, and which survived relatively steadily over the Middle Holocene, came to sudden decline in Central Europe. “Modern” types of less productive and nutrient-poor beech, fir and pine forests have replaced them. The working hypothesis, which has succeeded in supporting rich documents, points to a natural change in connection with the progressive depletion of the ecosystem through decline in biologically active mineral compounds. It is the same kind of development that was characteristic of the temperate ecosystems of our planet during all previous interglacial stages of the Quaternary. Nutrients, especially biologically active forms of phosphorus, have arrived to the ecosystems in the form of a wind-transported dust during the loess accumulation phase of the Last Ice Age. The humid and warm Holocene climate, which has been acting for many millennia to soil substrates enriched with this wind-transported dust, has resulted in progressive soil degradation due to the successive loss of nutritive compounds; surface acidification thus resulted in a retrogressive soil and biological successions. Against the backdrop of such gradual controlling climatic and related geochemical processes, numerous biotic and abiotic events can be observed - forest fires, windswept occurrences, erosion, immigration and expansion of new organisms. Were also people responsible? To answer this question, a comprehensive environmental-archaeological research has been conducted in the Czech Republic. Indeed, correlations suggest that people really could participate in the changes, especially through logging and nomadic animal herding.

25. Karel Černý

***Epidemics in Human History* 699**

The chapter attempts to unpick the complex interaction between epidemic crises, the history of human society and its possible collapse. While epidemics have been “plaguing” the human race for millennia, we argue that they are by no means a homogeneous phenomenon. Careful historical examination has shown that they have to be studied from various perspectives. We start first with the term “epidemic” as it was understood by physicians in the past. The next section

presents three frameworks for historical research about epidemics: paleopathological, cultural, and bio-medical. Each has its own specifics and leads to a different understanding of epidemic crises. The final section is based upon the selection of several prominent microbiological agents (plague, leprosy, TB, syphilis, smallpox, HIV, flu) in order to comment on the specific aspects of their interaction with society. Although societal collapse, or fear of it, is an important theme throughout this chapter, we also suggest that “plagues” have often had a rather heterogeneous impact because the threat which they posed was sometimes eagerly answered, leading to progressive cultural, social or scientific changes.

26. Lenka Lisá

About the Collapses Hidden under the Surface of the Landscape . . . 741

Using two episodes from different periods and different parts of the world, the text introduces the reader to a way of understanding the surrounding landscape and its predicative value in pointing out the possible causes and consequences of collapses of human societies. The reader is offered an excursion to the Bronze Age on the north-western margin of Prague where in that age the unrestrained activities of farmers triggered an ecological disaster. History is repeated in the second episode when the reader is transferred in mind to the eastern coast of Scotland, to the romantic landscape of the Culbin Forest.

27. Václav Cílek

Raw Materials and the End of the World - from Collapse to Regeneration 753

Due to population growth and the increasing demands of mankind, we currently find ourselves in yet another transitional period of European civilisation. A characteristic feature of this period is that we have reached the limits of traditional growth and face both relative and absolute scarcity of certain raw materials and resources. The raw materials which will soon irreversibly run out are not many, but there will be a relative scarcity of practically all of them, with the exception of aluminium, iron, natural gas and a few others. Most of the traditional deposits of gold, silver, tin, and also oil are approaching the last third of their lifetime. The author anticipates that in approximately the coming three decades there will be a concurrence of climate, economic, food and energy crises which thanks to our historical experience and the ability for regeneration we shall probably be able to successfully overcome, albeit at a palpable cost.

28. Vladimír Brůna, Kateřina Křováková, Peter Chrastina

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The authors reflect on the landscape as a space in which since time immemorial man has moved around, worked, lived and also ended his road through life. The specific subject is the Most Basin, known today especially for its up to 45-metres-thick coal seams. It has been the exploitation of this brown coal that has brought about irreversible changes of the Most landscape – a loss of its memory. The study offers a view of the Most landscape from many angles: it deals with its structure, the functions of the individual elements of the landscape and also with the identification of changes that took place in space and time – all this by applying many scientific research disciplines.

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8. The Heraclitus Law⁵

Miroslav Bárta

The *Heraclitus Law* (or Principle) is a label for a particular characteristic repeatedly observed by any given civilisation or culture for which there exists substantial evidence. The law describes a mechanism according to which the factors responsible for the rise of a particular civilisation or culture are usually the same as those which, in the end, instigate its crisis, meaning thus a quick and deep loss of its complexity, immediately usually followed by a stage of regeneration and a following rise. Next, there is a second observation – if we want to understand why a system is facing a real or apparent crisis, it would be a mistake to focus only on the imminent phase of the crisis. It is much more productive to concentrate on the stage during which the civilisation or culture was emerging. It is there, if the factors involved in its rise are identified, that we usually find the key to understanding the actual stage of the crisis.

Along with this, I will attempt to point out some specific features of the concept of the cyclical reappearance of certain general phenomena. This discussion on the topic of cyclicity may be a revealing line of research in social sciences as such (for a comprehensive overview see, for example, in Czech, Bárta, Kovář, eds. 2011; Bárta, Kovář, eds. 2013; in English, Tainter 1988 and Morris 2010).

In 2011, I, together with the Czech historian Martin Kovář, edited a book on the development of civilisations from prehistoric to the present times. The title of the book published in Czech was *Collapse and Regeneration. The Roads of Civilisations and Cultures. The Past, Present*

⁵ This text combines some new reflections of the author as well as modified older text passages originally included in the monograph *Příběh civilizace. Vzestup a pád stavitelů pyramid (The Story of a Civilisation. The Rise and Fall of the Pyramid Builders)*, Prague: Academia 2016. See also Bárta 2019.

and Future of Complex Societies (Bárta and Kovář, eds. 2011). It comprised about thirty analytical studies. It was thanks to the independent analyses of its individual authors that an observation came to light: factors that usually trigger the rise of a social system at the same time navigate this system into a crisis. By analysing various cultures and civilisations, the authors of the book showed that usually specific factors that could be considered pro-growth were the same as those that logically became affected over time and, in the end, drove the system into a period of stagnation and eventual crisis followed by a collapse (Bárta 2011).

After some research, it became possible to identify some earlier authors who had arrived at, more or less, the same conclusion referred to by the Heraclitus Law. The first was the Russian American sociologist and theoretician of culture, founder of sociology at Harvard University, Pitirim A. Sorokin (1889–1968). In 1941, he published a work entitled *The Crisis of Our Age*.

In this book, Sorokin discusses the cyclical nature of the development of civilisations. He draws a distinction between ‘sensate’ and ‘ideational’ culture. Where richness, diversity and individualism prevail in a society, the culture is thus sensate. Where religion, stagnation and the collective spirit dominate in a society, the culture is hence ideational. This is a phase which, according to Sorokin, we are supposed to be entering into in this period (Sorokin 1941). Sorokin elaborates on the causes of an imminent crisis and concludes that the roots of the upcoming ‘tragedy’ go far back and are intrinsic to sensitive culture. He concludes that the same forces that led to the rise of these spectacular creations were also the cause of the inevitable spread of the phenomena of their crisis and disintegration. However, Sorokin was not the first to discover the principle of pro-growth factors that would then transform into ones that would lead the system into crisis.

Heraclitus of Ephesus

Heraclitus was one of the most outstanding pre-Socratic philosophers. About him, his life and his work, very little is known. Only fragmentary quotes from his thoughts and writings have survived. Some details about Heraclitus’ life can be found in texts by the historian Diogenes Laertius, who lived seven hundred years after Heraclitus and was author of the *Lives of Eminent Philosophers*. Heraclitus was born around 540 BCE and died around 480 BCE. What we do know about him is that he descended from a royal family. His ancestors played a role in the foundation of the Greek colony of Ephesus, which is located on the territory of what is today Turkey.

The legendary founder of the city of Ephesus was Androklos, son of king Kodros of Athens. Heraclitus, however, waived his claim to the exercise of royal office in the city state in favour of his brother and retired to the sacred Temple of Artemis at Ephesus. This was a rather symbolic act as Ephesus was in fact under Persian rule and the role of the king was mostly formal and ceremonial. It was evidently during his stay in the temple asylum that Heraclitus composed his first 'book', a scroll dedicated to Artemis, which today would be equivalent to several dozen pages. An estimated third of this text has been preserved, of which some 144 fragments - aphorisms - are considered genuine (for more on the life and work of Heraclitus and interpretation of the meanings of the individual fragments, see Sweet 2007).

In two of the fragments Heraclitus states: 'The road up and the road down is one and the same' (fragment B 60) and 'Gathered together the beginning and the end of the circle are the same' (fragment B 103). What probably follows from these isolated and brief thoughts is that Heraclitus concluded that the universe and all the processes in it were of a cyclical nature and that once they had travelled the length of their trajectories, they so returned to their beginning. Indeed, the idea of a cyclical reemergence appears repeatedly in Heraclitus' thoughts. According to him, an important role in this field of reflection was played by the symbol of a road that rises and descends, but is always the same. This concept embraces both the vertical dimension and the aspect of time, which helps us to come to terms with the fact that although we are able to return after some time to the starting point or initial state, this state will be somewhat different every time. This, for that matter, is stated by Heraclitus himself, when he says that "no man ever steps in the same river twice" (fragment B 91).

Giving credit to Heraclitus, it must be admitted that a similar line of thought was probably pursued by his predecessor (or perhaps a contemporary) Anaximander. What is of significance here is his statement dated to around 560 BCE and preserved in what is today fragment B1:

"Whence things have their origin, thence also their destruction happens, as is the order of things; for they execute the sentence upon one another - the condemnation for the crime - in conformity with the ordinance of Time."

(Diels and Kranz 1960, 12A9)

This is the first part of an utterance that is strikingly similar to the way of thinking documented in Heraclitus' works. Unfortunately, even less is known about Anaximander and his philosophy than about Heraclitus. Be that as it may, we can date the earliest documented reflections on the phenomenon of identical factors contributing to

the birth/rise and crisis of a society to the 6th century BCE, if not earlier, and attribute them to pre-Socratic Greek philosophers.

The course of civilisation

At this stage of our knowledge, hardly anyone would object to the opinion that every social entity or civilisation had or has followed, a typical evolutionary trajectory of emergence, rise, climax, decline, crisis and regeneration leading to a new rise. In 2010, the British historian Niall Ferguson published an article on ancient civilisations (Ferguson 2010). Using several comparisons, Ferguson offers an obvious conclusion that all civilisations will expire one day regardless of their size and nature.

Ferguson supports his observation with the help of several allegoric paintings by the Anglo-American artist Thomas Cole (1801–1848), who in his series of paintings *The Course of Empire* captured five major epochs in the development of an anonymous empire. The first painting is called *The Savage State* and shows a landscape almost untouched by human hand; a storm is approaching and a small group of hunters and gatherers is looking for a place to hide. The second painting, *The Arcadian or Pastoral State*, shows an agricultural landscape, deforested and covered in fields, with a small Greek-style temple. The third stage, *The Consummation of Empire*, presents an image of a society at the peak of its power. We see a large stone city with many grand buildings and temples, droves of richly clad people – the political elite of the empire, merchants and rich citizens. The penultimate painting is called *Destruction*. Here we have the same city immersed in fighting and gradual decline due to internal conflicts and raids by marauders. Finally, the last painting in this series, *Desolation*, depicts a return to the initial stage; once again there is the natural landscape, exhausted and immersed in silence, taking in a new breath and entering a period of respite, where traces of previous events are visible only in isolated ruins.

Ferguson points out in his article that most of the great empires collapsed abruptly – starting with Rome and ending with the decline of the British Empire at the beginning of the second half of the 20th century. For example, the Roman Empire, or more precisely its western part, succumbed to barbarian invasions within two generations – in roughly half a century.

This beginning of the end started in 406, when Germanic invaders crossed the Rhine and entered Gallia first to then step on Italian soil. The city of Rome was sacked by the Goths in 410. Soon after that the Western Roman Empire had to go to war with the Vandals over

the rule of Spain. Between 429 and 439, Genseric (389–477) led the Vandals in North Africa from one victory to another, until he took the city of Carthage. The difficulties faced by the Empire and the loss of control over the Eastern Mediterranean resulted in a significant weakening of the empire, which depended on grain imported mainly from Africa. The Romans, who faced enormous financial difficulties, managed to fend off the onslaught of Attila's Huns from the Balkans only by a hair's breadth. During 452, the empire lost the whole of Britannia, a large part of Spain, a large part of Gallia and the Roman province of Africa. In fact, the Roman Empire receded to its former borders, to what is today Italy. In 455, the Vandals sailed in from Carthage and once again conquered Rome. The following sacking of Rome went on for two continuous weeks; the number of dead reached into the thousands, and many people, including the two daughters and wife of the deceased emperor Valentinian III (419–455), were taken away on boats and carried back to Carthage together with looted treasures.

By 476, the Western Roman Empire was no more and the spoils of war included the city of Rome, which became the seat of the ruling Goth chieftain Odoacer (433–493). Technological skills and the procedures and operations of the imperial administration faded out, competent officials and clerks disappeared and international trade, crafts, education and mass production declined (Ward-Perkins 2005, 16–17).

Pillars of the western world

As mentioned earlier, what we consider to be pro-growth or essentially stimulatory factors appear to be identical with the factors that logically become depleted after some time and, in the end, drive the system into a period of stagnation and crisis. A classic example that offers itself here is the proliferation of bureaucracy. This, at first glance, is unequivocally a positive phenomenon – the growing complexity of a system requires the development of a layer of professional administrators with various specialisations, who know their roles and bearings in the system, are able to organise it, collect taxes, control economic flows, supervise redistribution of economic resources, etc. The same applies to the development of a hierarchically divided society, enabling the swift transfer of decisions and their implementation. After a certain time, some of the elements of such a social system begin using, and unavoidably eventually also abusing, their dominant positions, causing the system to disintegrate into smaller parts. If this happens within a larger area of the state, the phenomenon can be qualified as, *inter alia*, segmentation.

As a case in point, this rule can be tested with the help of another book by the earlier mentioned Niall Ferguson – *Civilisation*. In this work published in 2011, Ferguson lists and describes the main pillars on which our ‘western’ civilisation has developed. They include free scientific research, free competition, private ownership, consumption, health care and work. All this, of course, together with the observance of ethical principles and maintaining the so-called social contract, which basically means common sharing of the standard norms of behaviour, ethical principles, values and implicit (uncodified) law.

Looking at these factors today, we can see that they are becoming more and more compromised. Scientific research is facing increased bureaucratic constraints, commercial demands and commercialisation in general, which in turn decide what research is good and what is superfluous (from a short-term point of view); free competition is pared down by regulation and a legal jungle as well as by other adverse phenomena familiar to any business person and company owner; private ownership is being replaced by anonymous and corporate ownership (often to such a degree that it is corporations that have a major impact on history (comp. facebook, google, many banking institutions etc.) ; consumption is increasingly being used together with the media to indoctrinate vast segments of the population and that in an absolutely unproductive manner; health care is becoming a significant political issue and a component of the techniques of power obtainment and, finally, work has long ceased to be a means for the individuals to do more and work over a set minimum as they want and deem fit. Many of these features are in fact also the topic of several other contributions featured in this book. On a general level, many of these characteristics fit what is now called a deep state (Lofgren 2016).

Francis Fukuyama (2015) looks at similar issues from a different perspective. He analysed the efficiency and performance of the American political system and basically arrived at the same conclusion. It is solid and immune to any attempt at a positive modification as all the players in the system defend the present *status quo*. Fukuyama calls this system vetocratic, and the operating Heraclitus Law illustrates this on two simple charts, showing the costs of the decision making processes and the perils of bureaucratic autonomy (Fukuyama 2015, 469, fig. 22 and 492, fig. 25). In both of them, we can observe that after a positive development and rise in efficiency, there arrives a sharp break leading to an increasing dysfunctioning of the system.

A more general phenomenon can be added to these basic pillars of western civilisation – the steadily steep growth of complexity (Tainter 2006). The increasing organisation and sophistication of a society

naturally enhances its effectiveness and strengthens its ability to deal with problems. With the passage of time, however, the issues become so complicated as to require demanding and costly solutions. It is not only the cost associated with the further development of the system that grows, but also the mere maintenance of the system which becomes very costly. The system thus becomes less and less effective and begins to absorb an increasing amount of energy/resources (see the complexity growth of the U.S. law system: Li, Larochelle, Hill and Lo 2015).

Looking back on the past, one can see that qualitative leaps in a society's complexity usually occurred as a consequence of the discovery of a new source of energy, such as the burning of coal, the discovery of oil or nuclear energy. We are currently confronted by the fact that we long for yet more complexity and sophistication, but the existing sources of energy appear either insufficient or are becoming increasingly expensive (compare the drop in EROI⁶ in the case of major sources of energy - water, solar, coal, oil, wind, nuclear and others - as presented in Hall, Lambert and Balogh 2014).

The result of all this is the creation of relations distorted by regulation and often artificially created demand, and a decline in the quality of public and state institutions - this, by the way, is another pillar that needs to be added to Ferguson's list (compare Acemoglu and Robinson 2012) - due to the extreme influence of stakeholders (discussed most recently by Fukuyama 2015).

The “emergence” of the modern world

How do we actually date the beginning of ‘western civilisation’ - a concept we all so much like to refer to and work with? In my view and in the context of the previous discussion of civilisational phenomena, it could be useful and quite adequate to identify its beginning with the invention of the printing press by Johannes Gutenberg in 1447-1448. The printing press triggered at the beginning of the 16th century, if not earlier, a mighty boom in research, inventions and the innovations so characteristic of our world. This was reflected in the enormous intensification of fundamental discoveries in astronomy, biology, chemistry, geology, physics, mathematics, medicine and technologies after 1500. This tentative date may serve as a kind of symbolic starting line from which science

⁶ Energy Return On Investement - the ratio of energy returned to energy invested in that energy source.

broke into a run in all its major fields and disciplines (Murray 2003, 16-204).

One of the main reasons was book printing and the fast rate of the production of books and their dissemination after 1500. The availability of information resulted - both then and today - in our part of the world being exposed to a huge impulse, leading to the expansion of the human mind and civilisation as such. Naturally, the cause of this expansion was not only Gutenberg, but also, for example, the wave of overseas exploration, which followed a couple of decades later and which showed, amongst other things, that Europe was not necessarily the centre of the world but that there were also cultures, ethnic groups, religions and entire continents of which, until then, we had had no inkling. The natural consequence was, of course, a relativisation of our established values and the emergence of totally new intellectual challenges.

Quite in line with the theory based on the Heraclitus Law, the Gutenberg effect seems to have exhausted out today; time and time again democracy transforms into mediocracy due to arbitrary use of data, information and knowledge and their arbitrary manipulation, when the common user/citizen is often unable to sort out and evaluate the meanings of multiple contexts and the conclusions based on them according to meaning and reality. We are entering a period which is often referred to as a liquid modernity, to use Zygmunt Bauman words (Bauman 2000).

Cycles in the present-day context

Another significant study on the development, cycles and factors affecting the rise and decline of civilisations or societies is the result of the research conducted by Safa Motesharrei, Jorge Rivas and Eugenie Kalnay. Published in 2014, it deals with the dynamics of the development of society and the exploitation of the natural environment. The study, also called the HANDY model, starts with the following statement (Motesharrei, Rivas and Kalnay 2014, 90):

It is common to portray human history as a relentless and inevitable trend toward greater levels of social complexity, political organization, and economic specialization, with the development of more complex and capable technologies supporting ever-growing populations, all sustained by the mobilization of ever-increasing quantities of material, energy, and information. Yet this is not inevitable. In fact, cases where this seemingly near-universal, long-term trend has been severely disrupted by a precipitous collapse - often lasting centuries - have

been quite common. A brief review of some examples of collapses suggests that the process of rise-and-collapse is actually a recurrent cycle found throughout history, making it important to establish a general explanation of this process.

Using modelling techniques, the authors reflect on the consequences of the variables in the following major parameters of a specific population: birth rate, mortality, the carrying capacity of the natural environment, the proportion of the elite to non-elites (“commoners”), and finally, the rate of redistribution/sharing of its economic potential. In their work on the modelling of nepotism and the influence of interest groups, Radek Mařík and Veronika Dulíková point out that the technique is more a simulator than a real tool for modelling the development of a complex society (Mařík, Dulíková 2015, 107).

The study also followed on older analyses that appeared in the late decades of the 20th century. As early as in 1968, a group of politicians, businessmen and scientists of various disciplines convened at the *Accademia dei Lincei* in Rome, where they had been invited by the Scottish scientist Alexander King, to discuss the already then emerging issue of the short-sighted building of states and of the overloading of both renewable and non-renewable natural resources. The result was the foundation of the Club of Rome, which until this very day is an influential and active thinktank. In the years that followed, an extensive and elaborate theoretical model was devised by Jay Wright Forrester and Dennis Meadows, called World2 and later World3. This model dealt with the relatively complex relations of human societies in five basic categories: population, natural resources, pollution, agriculture plus pedology and economics (Meadows, Meadows, Randers, Behrens 1972 and Meadows, Randers, Meadows 2004). The main benefit of this model was the particular warning it contained about the deepening conflict between the practices of the people and the real capacities of the planet Earth.

Regardless of this, the 2014 HANDY model is still very useful, because it enables us to have a general answer to the question of what would happen “if”. The “if” refers especially to the variables in the differential equations describing three basic situations. The model involves three types of societies. The first one is egalitarian society – a society in which there is no social inequality and unequal redistribution. Such a society has good prospects for long-term development. Then there is the society undergoing a Type-L collapse. This is a society with small numbers of elites, where inequality in redistribution and exploitation of resources leads to the decimation of the majority population. After a collapse, this society is capable of regeneration. Finally, the third type of situation is covered by the concept of a Type-N

collapse, when the elites consume many times more than the majority population. In this model, the first to collapse is the majority population, which is then followed by the elites, who at first continue to operate on the BU (business as usual) principle - *i.e.* they behave as if nothing was happening (Motesharrei, Rivas, Kalnay 2014, 100). The status and the resources of the elites allow them to use their possibilities and resources to accumulate rapidly thinning resources and funds. Compared to the elites, the majority population has no such tools and is therefore the first to bear the brunt of unfavourable events and processes, while the “well-supplied” elites are able to withstand such factors without greater losses; they remain in their given positions and continue in their behavioural stereotypes and hitherto ways of dealing with problems. The existence of a buffer zone separating the elites from the majority population can be described using a parallel from an old Czech proverb which states that “the carps will never drain their own pond.”

This saying brings us to the formulation of a general principle that explains why the elites are usually largely inert when facing a looming crisis. In the early stages, the crisis primarily affects the majority population, which quite logically does not possess the means and often not even the ability to respond to imminent difficulties. It is only when this, the largest segment of society, is severely affected and decimated that the “membrane” becomes permeable and a larger part of the elite also becomes aware of the crisis. By that time, it is often too late for any effective measures; moreover, such measures cannot meet with response and support from the already severely affected majority population - the elites lose their legitimacy, they are unable to push even the right measures through, which at any rate came too late and would have needed to be accepted by the majority population. That group, however, is no longer willing to pay heed to the elites, who failed to meet expectations; the crisis thus strikes with full force and eventually both parties pay the costs, nobody wins.

How much does everything repeat itself?

With regard to the conclusions made above, it can be stated with confidence that the phenomenon of rise, fall and subsequent regeneration is inseparably linked to the development of human societies. It is, in a way, a part of the genetic code of every civilisation. Civilisations and cultures are born, develop, culminate and transform through crisis. One of the relevant questions history poses is, of course, the manner in which civilisations develop over time and the degree to

which everything really does repeat itself. To what degree does the linear approach to history, where everything keeps moving ahead and the time axis is divided into shorter sections of development of unidentical length, include elements of cyclicity?

A fairly typical aspect of the 'collapse' of a society or civilisation – or of a certain dividing line indicating a fundamental change in quality and complexity – is primarily the fact that society is actually not aware of its heading that way or of something being somewhat out of order. At the same time, history and archaeology are, amongst other things, sciences of dividing lines and of the changes and reasons leading to them. A big question that arises during the study of fundamental changes and collapses in societies is also whether these occur as the consequence of a long-term process or processes, or whether they are the result of singular events.

A very inspiring and crucial book in this regard is the work of the medieval Arab scholar Ibn Khaldun (1332-1406) and his theory of the cyclical regeneration of ruling Islamic dynasties. Ibn Khaldun postulated that this change occurred through a gradual process. The theme is discussed in depth in a work bearing the abbreviated title *The Muqaddimah* (in Czech Ibn Chaldún 1972) – “Introduction” – which includes reflections on the seven volumes of his *Book of Lessons*. The latter work deals with the history of all the countries, regions and peoples who came into contact with the Islamic world. For our purpose, the most important part of the *Introduction* is probably the one discussing the natural lifetime of ruling dynasties. We shall see that at this point Ibn Khaldun came very close to the current modern concepts of cyclicity, as encountered, for example, in Peter Turchin's work (see further).

Ibn Khaldun based his theory on the fact that no dynasty usually spanned over more than three generations, and he set the duration of a dynasty at approximately 40 years. After this period, which lasted roughly one hundred to one hundred and twenty years, there was a hiatus, leading to a new form of government (Ibn Khaldun 1972, 177). Ibn Khaldun described this mechanism, of course, on the basis of the Arab “Bedouin” dynasties:

It reaches its end in a single family within four successive generations. This is as follows: The builder of the glory (of the family) knows what it cost him to do the work, and he keeps the qualities that created his glory and made it last. The son who comes after him had personal contact with his father and thus learned those things from him. However, he is inferior in this respect to (his father), in as much as a person who learns things through study is inferior to a person who knows them from practical application. The third generation must be content with imitation and, in particular, with reliance upon tradition. This member is inferior

to him of the second generation, in as much as a person who relies (blindly) upon tradition is inferior to a person who exercises independent judgment.

The fourth generation, then, is inferior to the preceding ones in every respect. This member has lost the qualities that preserved the edifice of their glory. He (actually) despises (those qualities). He imagines that the edifice was not built through application and effort. He thinks that it was something due his people from the very beginning by virtue of the mere fact of their (noble) descent, and not something that resulted from group (effort) and (individual) qualities. For he sees the great respect in which he is held by the people, but he does not know how that respect originated and what the reason for it was.

(Rosenthal 1958, 182)

Although the text is very old, it can be used largely as a kind of intellectual starting point for further examples of approach to history and the related reflections. There is one thing the text cannot be denied: that even today it has a certain timeless and topical aspect, especially in the overall impression it conveys of cycles that demark the rise and fall of specifically formed social entities. Ibn Khaldun also deals with the change that occurs when every dynasty that has lost its internal dynamism is replaced by another. This, in his view, does not necessarily mean a demise or destruction; it is in essence a regenerating, “self-renewing” mechanism of the type we, in fact, usually associate with the process of the collapse of a social system – the moment when a system is either internally exhausted or is crippled by external factors, and it becomes necessary to begin rebuilding its structure from scratch. The system does not usually disappear but transforms and this transformation also requires periods of relatively small complexity, periods when the system does not have the resources to expend large amounts of energy on its further growth.

Vico, Spengler and Toynbee

This stream of thought was later followed by a whole number of authors, such as Giambattista Vico (1668–1744) with his theory of the three phases of the development of civilisations – the Theocratic (Divine) Age, Aristocratic (Heroic) Age and the Democratic Age of people (in Czech Vico 1991). The most prominent 20th century proponents of the cyclicity of development included Oswald Spengler (1880–1936) and Joseph Arnold Toynbee (1889–1975). Karl Marx (1818–1883), on the other hand, was a proponent of the linear concept.

Looking into the past, Oswald Spengler, one of the most outstanding German philosophers of the first half of the 20th century, identified

eight great civilisations – ancient Egyptian, Chinese, Indian, Babylonian, ancient Greek and Roman, Arab, Mexican and the current western civilisation. In his approach, he broke away significantly from Marx's linear concept of history. In Spengler's view, immortalised in his still influential *The Decline of the West* published in 1918, the basis of the development of civilisations and cultures was a never-ending cycle of birth, development towards a peak, and then demise (Spengler 1918–1920). To characterise their development, Spengler used the analogy of the year typically divided into four seasons. He identified Spring with the feudal phase; Summer with the expansion of towns existing in harmony with the countryside; he compared Autumn to the onset of decline accompanied by centralistic tendencies, expansion of trade, secularisation – *i.e.* the alienation of symbolic forms of thinking, and booming urban life. Finally, Winter was under the signs of decline, which meant the growth of destructive plutocracy, loss of identity and of ideals, and life in unrestrained city agglomerations.

In Spengler's view, the main developmental phases of the eight great civilisations were identical, and he claimed that due to this, it was possible to guess what the future direction of civilisations that had not yet ceased to exist would be. Also interesting was his concept of identical durations – to put it simply, this was a postulate based on the presumption that, measured in time, the periods of existence of civilisations were approximately of the same length. This was also because of the fact that civilisations developed according to the same key stages. For Spengler, the last stage of development of any culture was a “civilisation”. The latter was characterised every time by, amongst other things, the loss of the meaning of history, by artificiality and by stagnation in all spheres of life, materialism accompanied by loss of religion, the spread of depravity and an enormous boom in the entertainment industry, the decline of morality and art, and an explosion of violence and devastating wars.

Joseph Arnold Toynbee, on the other hand, achieved fame with a comparative method he used to analyse and establish a correlation between all the accessible and known civilisations in world history. *A Study of History*, a work in ten volumes published in London between 1934 and 1954, especially discusses in detail the regularities in the development of civilisations. Toynbee reached the conclusion that civilisations emerged as a consequence of dealing with external and internal challenges and, as such, were conditioned by both culture and nature. Thus, according to Toynbee, the ancient Egyptian civilisation developed because of the necessity of the Nile valley populations to deal with the Nile floods.

Toynbee identifies twelve successful civilisations in total (including our own “western” one). To these he adds four abortive civilisations, which failed to rise to their promise, and five arrested civilisations, characterised by castes and rigid specialisation. Toynbee believed that all civilisations were unique. This is because each of them had or still has to face different challenges and chooses specific ways to deal with them. However, what they all have in common is that challenges are resolved by the “creative minority” – an infrequent part of the population – which is able to see further ahead and find effective solutions. A religious system is usually involved at the beginning of a civilisation. The moment the minority stagnates in its development and loses its ability to resolve problems, it becomes a “dominant minority”; it consolidates its privileged status by force and becomes the pole against which the dominant layer of the “internal” proletariat living within the state, and the “external” proletariat – a group of people living beyond the boundaries of a given civilisation and attacking it from the outside – form their ranks. The result is the development of a “universal state”, the last stage prior to the demise of the civilisation in question. The dominant minority entrenches itself and a battle with the majority ensues; the creative qualities of the dominant minority fade away as well as its ability to respond to internal and external stimuli.

Theory of cycles and frequency of conflicts

The theory that cycles occurred not only in the distant past but also during the development of present-day civilisations is a topic explicitly expounded by the American scientist Peter Turchin. His study published in 2012 contains a very specific analysis of the development and incidence of crises in the United States of America in the period spanning from 1780 to 2010, *i.e.* from the beginning of the American republic until the time when the study was conducted (Turchin 2012). According to Turchin, two regularly occurring cycles can be identified during this span of the country’s history. The first was approximately fifty years long with oscillations culminating around the years 1870, 1920 and 1970. The second was much longer and can only be roughly defined; Turchin calls it the secular cycle – a cycle characterised by the Long Depression in the second half of the 19th century and framed by periods of calm and prosperity at the beginning of the 19th century and during several decades in the middle of the 20th century. This means that this part of the cycle continued for a little over one hundred years. The merit of Turchin’s study lies especially in the fact

that he looked for the major factors causing uneven development in the inner dynamics of society and civilisations, which in his view were decisive in bringing about periods of instability (Turchin 2012, 578).

The duration of a secular cycle can be hundred to three hundred years. It is a cycle comprising an interval of approximately one hundred years of calm (the integrative phase) development, followed by a century of instability (disintegrative phase). The phases are then further divided into shorter cycles of some 50 ± 10 years. What is essential besides the duration of these cycles is that the nature of the change taking place within them is not linear, but occurs in leaps - Turchin uses the attribute "saw-toothed" (Turchin 2012, 578 and 578, fig. 1). This is reminiscent of the theory of punctuated equilibria, which I consider to be the fundamental characteristic of historical development (Bárta 2015 and 2016).

What is of principal importance is that these *are not* cycles in the mathematical sense, which would be easy to calculate precisely. Turchin uses the term cycle because it is the most appropriate to use when referring to a repeating phenomenon clearly defined by its nature; meanwhile, the actual lengths of cycles may differ. While the hundred-year cycle is strikingly similar to the time-length of the existence of dynasties described so much earlier by Ibn Khaldun, the approximately fifty-year cycle evidently has a link to the genetic equipment of man. The explanation is quite simple - a generation that had experienced a true crisis would be very sensitive to its symptoms and capable of and willing to fight them. The following generation is partly able to do so too, at least as long as the older generation is still alive. Finally, loss of continuity becomes fully manifest in the third generation, leading to a slump in quality and complexity of life.

Turchin finds secular cycles practically in all agrarian societies of which reliable records exist (China, Near East, South-East Asia), while the fifty-year cycles do not necessarily always occur. According to Turchin, this means that there must be certain universal laws that lead to the incidence of secular cycles irrespective of the regional or historical context. He finds the answer in structural-demographic theory. The excess pressure of the labour force in relation to limited job opportunities leads to a build-up of enormous stress on the social institutions of a given society. This is reflected in constant pressure on price inflation, a reduction of real wages, a decline in villages and subsequent migration to towns, and leads to more frequent protests against existing wage conditions and to food riots. Simultaneously, the rapid rise in the education of the young generation results in *overproduction of elites*, when the number of applicants for elite positions is much higher than their availability. This pressure on positions also

leads to the development of “interest groups”, according to a theory formulated by Mancur Olson in 1982. The resulting networks link members connected through family or professional interests and crowd out any alien competitor for increasingly declining resources. The consequence of these trends is the inflation of the bureaucratic apparatus and the army, *i.e.* of the power forces of the state. Everything culminates in a fiscal crisis, there is resistance from both the elites and the people, and the central power of the state becomes severely eroded. Elite (authorities and political parties) infighting is rife. The next part of the cycle begins and the social contract comes to an end ... (Turchin 2012, 579; comp. Bárta 2015).

Turchin demonstrates this theory with examples of the number of internal conflicts in the development of the United States during the studied period. He identifies a total of 1,590 unstable (conflict) events and although the average frequency of these events is thirty-five per five years, their actual distribution is quite uneven. Practically sixty per cent of all conflict events involved rioting and looting, which culminated in 1870, 1920 and 1970 – that is each time after approximately fifty years (this implies that the next such event could be expected sometime around 2020...). Maybe this sequence should also include the time of unrest around 1830 and very probably also the period of the American Revolution of 1775–1783.

Turchin’s theory of overlapping cycles was based on an analysis of historical development not only in the United States, but also in a comparison with similar trends in other civilisations and societies. Turchin correctly states that at present it is not wars between states, but conflicts within states that are at the root of most conflicts. Since the end of the Cold War, internal conflicts accounted for more than 90 per cent of the casualties of intrastate crises. There is a very clear trend towards a rise in the number of such conflicts: in the 1960s it was around 29 percent, but after 2000 it was more than 92 per cent (Lacina and Gledistch 2005, 157, tab. 3). Also, it is the number of internal conflicts observed over long horizons that is Turchin’s starting point. His study is very enlightening because it is one of the few that follow truly long-term trends spanning even over several centuries; this significantly enhances the predictive value and relevance of Turchin’s observations.

Hungry and fat years

Nevertheless, there are evidently also other cycles that show that Man and Nature together form a mutually interconnected system, whose functioning principles are still understood only superficially.

For example, a study analysing the regularities and different levels of cyclicity of the Nile floods in relation to climate factors appeared in 2005 (Kondrashov, Feliks and Ghil 2005). A team of scientists proved that the regularities can be defined for a macrocycle of 256 years, which could be caused by astronomical factors. There are then much shorter cycles of 2.2 and 4.2 years. Somewhat longer are cycles of 12, 19 and 64 years. However, the biggest surprise was the confirmation of a cycle 7 years long. The authors place the 2.2 and 4.2 year cycles in connection with the southern El-Niño oscillation in the Indian and Pacific Oceans. This warming of the waters of the cold Peru (Humboldt) Current usually occurs around Christmas - hence the name Niño, "The Little Boy". El-Niño is a part of a major global and still little understood phenomenon called ENSO ("El-Niño Southern Oscillation").

The seven-year cycle, on the other hand, is evidently connected with the North Atlantic Oscillation. This latter cycle is especially interesting as it confirms, and not by chance it seems, an observation recorded by ancient civilisations of a cycle of seven years of great plenty and seven years of famine. This has been captured in the text of the Old Testament, which has a direct connection to ancient Egypt. In the Bible, Joseph interprets the pharaoh's dream as a parable of seven ugly and thin, and seven fat and sleek cows personifying seven years of famine and seven years of plenty.

Also in Mesopotamian literature, we find unique descriptions of climate oscillations lasting seven years. At the time, these phenomena were interpreted as the consequence of the displeasure of the gods against the human race, which the gods found to be a nuisance. The text below is almost 2,800 years old and was found in the Library of Ashurbanipal in Niniveh. It offers a very vivid description of a long period of crop failure and drought, which according to the preserved part of the text continued for six years, but the excerpt is incomplete, and the whole text may have originally been a description of the typical seven years of famine. Notice also in the text that the crisis in the country deepened with each successive year, striking the population with increasing force, until towards the end of the disaster people sometimes resorted to cannibalism:

*Enlil organised his assembly,
Addressed the gods, his sons,
'You are not to inflict disease on them again,
(Even though) the people have not diminished -
they are more than before!
I have become restless at their noise,
Sleep cannot overtake me because of their racket!*

*Cut off food from the people,
Let vegetation be too scant for their stomachs!
Let Adad on high make his rain scarce...*

*They cut off food for the people,
Vegetation... became too scanty for their stomachs,
Adad on high made his rain scarce,
Blocked below, and did not raise flood-water from the springs.
The field decreased its yield,
Nissaba turned away her breast,
The dark fields became white,
The broad countryside bred alkali.
Earth clamped down her teats:
No vegetation sprouted, no grain grew.
Ašakku was inflicted on people.
The womb was too tight to let a baby out.*

...

*When the second year arrived
They had depleted their storehouses.
When the third year arrived
[The people's looks] were changed [by starvation].
When the fourth year arrived
Their upstanding bearing bowed,
Their well-set shoulders slouched,
People went out in public hunched over.
When the fifth year arrived,
A daughter would eye her mother coming in;
A mother would not even open her door to her daughter.
A daughter would watch the scales (at the sale of her) mother,
A mother would watch the scales (at the sale of her) daughter.
When the six year arrived
They served up a daughter for meal,
Served up a son for food.
(Dalley 2008, 24–26, Atrahasis II)*

Despite the indisputable age of the documents testifying to the existence of the seven-year cycle, the phenomenon is one that continues to intrigue scientists till this day. The idea of an approximately seven to eleven-year periodical cycle of crisis in economic processes was devised as early as in the 19th century by the French physician and statistician Clément Juglar (1819–1905; Juglar 1862). However, there is still a lot of ground to cover before it is fully comprehended.

Conclusion

It is beyond question that no civilisation in the history of mankind has been able to survive without being confronted with a growth and then a subsequent decline in its complexity. We usually refer to the rapid loss of complexity using the somewhat misleading term “collapse”. This is not a fitting term; its common definition comes from natural sciences, where it very often denotes demise, extinction and the like. Phenomena like that are exceptionally rare in social sciences. What is important to emphasise when studying historical processes is that to be able to understand their decline, it is useful look for the factors responsible for the rise of a system. They are usually the same factors that later bring the system to a crisis. A crisis, however, does not necessarily mean an ultimate end and demise. On the contrary, it is a period which usually leads to a restart of the system and its new ascent. At the same time, collapse is a stage during which dysfunctional components of the system are being removed.

Maybe this is the moment when the reader will ask (unless he/she had done so earlier): “So how can we then lessen the impact of a looming crisis?” The answer may be simple, but implementation extremely demanding. What it requires is, first of all, simplifying the system, making it easier for the system to operate and take decisions and, consequently, reduce the cost of running it. What always happens in reality during the course of the development of a society is that growing complexity involves the rising cost of maintaining it, which is followed by more burgeoning complexity (in other words the rising ‘standard’) of society (compare Li et al. 2015 for the legal system). This is largely due to the vetocratic principle/effect.

The usual solution to problems associated with growing complexity is supposed to be presented by ‘innovation’, but thanks to *U. S. Patent and Trademark Office* data it has been possible to prove that the effectiveness of innovations goes down in fact with rising complexity, resulting in the well-known phenomenon of diminishing returns (Strumsky, Lobo, Tainter 2010). Significant impacts of this trend are already being felt today; it is not, by far, a question of the distant future. Not to mention state-organised innovation programmes, where most projects end up proving to be absolutely ineffective. Actually, the prevailing opinion emerging from the debates with many business owners was that in the case of Czechia from 1993 onwards, the only statistically significant way of achieving effectiveness by innovation was that of financing from private sources. The reasons for the differences in the effectiveness of the two philosophies (state subsidies vs. private investors) are evident.

There is in fact an isolated case in history when a system in crisis was actually simplified and continued to be successful in the long run. We are referring here to the reorganisation of the Eastern Roman Empire in the 7th century (Tainter 2006). This fundamental change occurred, so to say, in the last minute, as the empire was on the verge of collapse due to a long-term crisis. In 541, the Byzantine Empire conquered large territories in northern Africa and practically also the whole of Italy. Unfortunately, that same year a wave of plague engulfed the lands surrounding the Mediterranean Sea, killing 25 to 30 per cent of the population of the region. This was a genuine disaster, especially because it led to a drastic drop in the number of taxpayers and army recruits. In the beginning of the 7th century, the Slavs and Avars occupied the Balkans, the Persians conquered Syria, Palestine and Egypt, and Constantinople was besieged for seven years. Due to the general crisis, Emperor Heraclius had to reduce soldiers' wages by half and substantially devalue (reduce the precious metals content) the denar. This paid off and had an immediate effect. In 616, the siege of Constantinople ended and, after many years of fighting, the Persians were driven back to their original dependencies. Nevertheless, the empire was subsequently exposed to invasions by the Bulgars and Arabs, who in 636 inflicted a crushing defeat on the Byzantines.

By 659 the situation was so grim that soldiers' wages had to be cut by half once again and the treasury was close to bankruptcy. At that moment, the emperor decided to implement a radical simplification of the financial administration of the country, to cut the cost of maintaining an army and to do that in a very straightforward way. He allotted land to soldiers to farm on condition that military service would become hereditary in their families. These measures were reflected practically immediately in other spheres of the state administration: complexities were removed from both central and local levels of government, which reduced their cost. Instead of being consumers of state resources, soldiers, who now owned land, became producers. On top of that, fighting morale increased dramatically because the men were fighting for their own property. The ultimate result of this restart was that as early as during the 8th century Byzantium reconquered Greece and the southern Balkans. The continuing rise of the Byzantine Empire, which after 840 was double its original size, culminated in the 11th century with the defeat of the Bulgars, when the borders of Byzantium advanced to the Danube. Once on the verge of collapse, the Byzantine Empire became the dominant power in Europe and the Near East. This was made possible by the empire succeeding in reducing its complexity and the cost of dealing with its difficulties.

No matter how alien the idea may be to our way of linear thinking, which inevitably leads to the concept that we always have to do better and better, we once again see that a simplification of the way a system works may have very favourable long-term outcomes.

At this point, let us reiterate conclusions drawn from the discussion above. Civilisations develop at the same time both linearly – they never go back to the same point where they started – and cyclically, in the sense that they are characterised by stages they have in common – birth, rise, reaching their peak, descent, crisis and regeneration. It is also important to be aware that any stage of the collapse of a social system can be understood only if we succeed in analysing the incipient stage during which the system was formed and identifying the major factors contributing to its rise.

This mechanism has been referred to as Heraclitus Law because Heraclitus was the first philosopher/scientist to outline it, although credit is also due in this context to his predecessor Anaximander. The theory says that under standard conditions, the factors responsible for the rise of a certain social system will also precipitate its crisis. If the theory is right, then we, too, will have to face up to the necessity of mobilising our forces and abilities to restart our society within the frames of the crisis that fewer and fewer people doubt is approaching. We do have all the means to do so: the skills, knowledge, technologies and resources. Nevertheless, maybe we have not tried hard enough to set the best possible starting conditions to overcome this crisis in the fastest and most successful way. However, it is not extremely unlikely that one day we could be confronted with a steep loss in complexity. We may stand the test – using science, technology and – yes – knowledge of history. History and archaeology are the only sciences which can provide long-term data series and a deep picture of the past which describe societal processes from their emergence to their end. Such data sets are most valuable ones, as they show the anatomy of individual processes in their entire length and provide valuable scenarios which took place under specific historical conditions. This is why history and archaeology may soon emerge as strategic fields of research for this century.

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