

THE APPROACH OF COMPLEX SYSTEMS IN THE STUDY OF CONTEMPORARY SOCIO-ECONOMIC PHENOMENA

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Abstract

The objective of this paper has been to analyze some of the existing socio-economic phenomena such as progress, class division, new industries and forecasts. According to the author, modern life, new technologies and the abundance of information have distorted the understanding of them and a new complex approach to their study was required. That approach included the study of human behaviour, social relations, the consequences of policies and decisions in society. The approach of complex research and comparative, social anthropological and historical analysis was used.

Key words: complex systems; complexity; progress; class division; industries; experts

JEL: A2, P16, Z13, P48

Introduction

The world has become more and more complex and new approaches are needed to explore it. In recent years, a comprehensive research approach has been imposed in science, as civilization and society have been considered as a living organism with a behaviour different from those of the individual human beings of which it is composed (Bar-Yam, 1997). The encyclopaedic scholars (William Petty, Francois Quesnay, Adam Smith, etc.) follow this trend in the 17th and 18th centuries, but later their views were theorized by their followers and subordinated to a theory in which there have been clear connections and dependencies between phenomena, usually subject to the creation of models allowing various restrictions. Nowadays, scholars belonging to different fields of knowledge suggest an approach to scientific research called the science of complex systems. The science of complex systems offers a new research method that rejects the traditional restrictive scientific approach and tries to integrate the interactions and changes of different systems such as physics, biology, economics and technology. That approach includes the study of human behaviour, social relations, the consequences of policies and decisions in society. The complex

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systems behaviour cannot be predicted by their features therefore it is impossible to create models.

The objective of this article is to present some of the problems of the modern world and the need for a new interdisciplinary approach presenting the interdependencies of knowledge from different fields of science. Complex systems have been poorly studied in Bulgaria. A comprehensive and in-depth study is made by Borislav Gradinarov in the monograph “The Power of the Systemic Factor”. The purpose of this article is to present and apply a complex approach to some modern social phenomena. This study has no task to explore the approach of complex systems that can be applied in different fields of science. In the past twenty years the world has changed dramatically and has become very complex. The approach of complex systems can be applied to different areas, and therefore the purpose of the article is to focus only on these socio-economic phenomena.

The complex systems have a nonlinear behaviour, responding differently depending on the context. There is no general theory, and researchers address the particular problems with a view of the specific field of study. One of the approaches to the study of complex systems has been the network integrating the dependencies and interactions between the different systems. That approach allows researchers to formulate questions about human behaviour; the consequences of policies and decision-making have remained unexplored by the restrictive scientific approach. The complex systems assume the existence of randomness, uncertainty and insecurity, both of the events that would occur, and of their consequences and eventual interactions. According to the science of complex systems, there are events and variables outside the average distribution of the Gaussian curve that could not be covered by statistics and be analyzed. Complexity means the independence of the separate autonomous parts that are differentiated and integrated if required. Whether in the business or in another domain, the axiom of complexity assumes that the behaviour of an individual is different from that of a group of people.

The most important characteristics of the complex systems is that the system's behaviour is different from the behaviour of its constituent elements, thus there is a variety of behaviour. Nasim Taleb explains that “artificial, man-made mechanical and engineering contraptions with simple responses are complicated, but not “complex, as they don't have interdependencies. But with complex systems, interdependencies are severe” (Талеб, 2013, p. 84). The interdependencies and internal relations are more important than the nature of the parts themselves (Градинаров, 2019). In the study of the complex systems it is necessary to identify their elements and analyze their nature, character, qualities and evolution (Градинаров, 2018). Most authors studying complex systems unite around the

thesis that complex systems consist of many elements and different interactions among them. A system is complex when it is not possible to understand, study and predict the possible results (Градинаров, 2019, p. 164). For the needs of our study we assume that the complex system is one in which the interaction between the individual elements can create different collective and individual results, and the interactions between its various elements may not be permanent but periodic (Taleb, 2020, p. 87).

Complex systems require to be studied in their dynamic integrity. Systematic research is not modeled by preliminary axioms, but depends on the subject of research. The main characteristic of systematic thinking is to see the whole and to understand the processes with which its elements are connected (Градинаров, 2019 p. 21). In this study we follow the thesis of Bar Yam that there are two approaches to the study of complex systems. The first approach selects the complex system, studies its parts and their interactions to show how the behavior of the system originates from them. The second approach considers systems as an ensemble of systems with certain known properties and uses statistical analysis to study the behavior of systems (Bar Yar,1997, p. 9).

Table 1

Examples of Complex Systems	Examples of Simple Systems
Governments Families The human body—physiological perspective A person—psychosocial perspective The brain The ecosystem of the world Subworld ecosystems: desert, rain forest, ocean Weather A corporation A computer Physiology Evolution Human economy and society Civilization Corporation National state Markets	An oscillator A pendulum A spinning wheel An orbiting planet

Source: Bar-Yam, Dynamics of complex systems.

Using the complex approach, we will try to explain some modern socio-economic phenomena that are considered by science in certain models that have

restricted the study to the point that the positive features of these phenomena are accepted almost without any reserves and the negative ones are hidden. These phenomena are discussed herein as complex systems with their elements, relations and interactions.

Civilization as complex system

The Paradox of Progress

The history of human civilization has not been a history of incessant progress, as there have been periods when mankind had gone backwards, violating the moral and social values. The accumulation of wealth and knowledge in one period used to be replaced by poverty, decline and ignorance. The broadening of knowledge is indisputable and irreversible. Despite the various real improvements in society and governance, they might be temporary. Expanding our knowledge deceives us that humans are different from the rest of the animals, however our history proved that is not the case (Gray, 2003 p. 155).

Humans had lived for hundreds of thousands of years as hunter-gatherers, and only a few thousand years as farmers. The philosopher John Gray suggests a different perspective on the stages and development of human civilization. The transition from the Neolithic to the agricultural age, from hunter-gatherers to farmers did not cause a huge improvement in welfare and the freedom of the community. Like the shift from the industrial revolution to the information society, it had enhanced the output forces of society, but did not enlarge their freedom. The hunter-gatherers used to have enough to satisfy their needs and did not have to work to hoard more. In the minds of those thinking that wealth is an abundance of objects (like the classical economists), the hunter-gatherers had lived in poverty, but from another point of view they had lived more freely, having no notion of poverty and no social inequality existed that at present has become huge.

The agricultural age caused some irreversible changes in the hunter-gatherers' way of life. Their nomadic territory of existence was within a few miles, so there were no major migrations. The advent of agriculture resulted in an increase of the human race and caused a demand for arable land that forced large communities of people to move and colonize new lands. Thus agriculture, not hunting, created the nomads. The hunter-gatherers were healthier than the farmers, although their lifespan was shorter. The agricultural way of life was related to the burden of labour. The hunters used to work less even than contemporary people.

The advent of agriculture led to a new phenomenon – class division. In the past, fruit gatherers did not hoard and store food, nor did they have permanent sources of food, such as orchards and livestock herds. They fed on wild plants and

animals, and with the exception of the children, the sick and the elderly, everyone looked for food. There were no kings, professional staff experts and other *social parasites* gaining weight at the expense of others. The growth of farming created a contrast between people tormented by diseases and a healthy elite. An example could be the difference in the skeletons found in a Greek tomb 1500 years ago. The royal skeletons revealed that kings used to have better food compared to the large mass of people and they were also 4-6 cm taller. The teeth of the elite hardly fell unlike those of the masses (Diamond, 2015, p. 181).

The progress in the development of mankind has been a myth. Nowadays we are more vulnerable than before and the corona virus epidemic has proven it. For the liberal humanists, progress is a superstition, far from human nature. Humanism has originated from Christianity based on the idea that the world could become a better place as a result of the people's free choice. The belief in progress and science as part of humanism has also originated from religion. Humanism itself is not a science, but a religion. The idea of progress is the secular understanding of the Christian faith in providence. The progress is cumulative in science and information collection, but not in human life, and what one generation has gained could be easily lost by another (Gray, 2003, p. XIII).

In modern times, change for change's sake, observed in the way of life, architecture, nutrition and other areas, is contrary to progress, because too frequent changes have prevented the benefits of previous changes from being retained. Evolution and progress also represented a change, however it has not happened too often (Taleb, 2019 p. 189). In the contemporary world, the economy has become more efficient, the specialization has increased and more subcontractors are used. Goods on stock have become less, there were more online sales, but a delay or failure in one link in the chain could lead to a crash. The economy at present is more efficient, but mistakes cost more and fortuities were much more expensive (Taleb, 2019, p. 136).

We live in a world we do not understand, but we are increasingly convinced and persuaded otherwise. The world is becoming an increasingly interconnected global complex system, which turns the local epidemic into a pandemic that in turn caused a global economic crisis. In his book *The Black Swan*, published in 2007 Nassim Taleb has predicted a global epidemic that would be resistant to the available antibiotics and would spread around the world. The reason for that is the artificial stability in which the world lives and the desire to eliminate volatility (Taleb, 2011, p. 462). The Corona virus epidemic in 2020 proves the fragility of modernity. Taleb called this epidemic not a black but a white swan, as it could be predicted with great certainty. The emergence of such an acute epidemic was inevitable as a result of the modern world structure. The economic outcome from the epidemic would be more complicated due to the interconnectedness of the

economy and its over-optimization. The modern world has implied more and more risks that we do not suspect (Taleb, 2020).

In ancient times, heroism was the sacrifice the hero made for others. Modern heroes are not dedicated to the community, but to themselves. Their qualities were not the result of public values because there are none. Without social values, a person's life was devoted to himself, not to others. Man lost his values because society has not offered such ones and he is forced to create them himself. All creative activity is transferred from the community to the individual, as the contemporary man should have global information from the internet and social networks to outline the path of their own life. At present it is impossible for the family to direct the children to an activity to be qualified and (to) have achievements as it used to be in the past. The opportunities are huge now, but they are in the global world and their recognition is more difficult than before. Wealth, which according to classical economists was an accumulation of goods, is also enormous in the modern world. However there is no freedom and social inequality becomes greater as a result of the distribution. Traditional social communities, families and small groups are disintegrating, and new social groups and phenomena are emerging.

Contemporary socio-economic phenomena

The Modern Class Division – the Emergence of the Tantalus Class

The contemporary world presupposes a new class division. Each age has created the necessary classes to become the engine of the economic development. Until recently, the values of the middle class were shared according to which work and entrepreneurship were the basis for success in life. The middle class did not exist in antiquity and in the Middle Ages while in the Roman Empire there was a minority of very rich people and numerous poor proletarians. The feudal states were ruled by a local landowning aristocracy subordinated to the king, and there were serfs.

The classes during the period of the classical economic theory were landowners, capitalists and hired workers. The focus of the classical economists of the 18th and 19th centuries was agriculture and the population providing food (for example, the physiocrats). The classical economists considered food to be the main means of subsistence for the worker. In their theories, the worker received a minimum of means of subsistence, and there were natural restrictions on raising wages above that minimum. In their minds, wealth was an abundance of goods, but workers again got the minimum means of subsistence. There was not an abundance of choices.

During the longest period of peace in the 19th century, after the Napoleonic Wars until the World War I, there existed great inequality in the world. Most people could only make their living. The economists from that period also believed that wages for natural reasons were reduced to a minimum means of subsistence. The existing inequality gave rise to class theories and the emergence of socialist movements. The Marxist theory that appeared at the time claimed that the capitalists' wealth was created by the unpaid labour of the workers. In the 19th century, only the very rich were protected from poverty. The rich could spend their lives without having any contacts with the poor. The price of peace was the disappearance of democracy and the emergence of an oligarchy of the rich.

The middle class had emerged as a third class – the petty bourgeoisie during the period of mercantilism. The middle class was the bourgeoisie that played a huge role for the cultural development and the creation of the community values. The term bourgeoisie is avoided and instead the middle class is preferred in the English language. The term bourgeoisie (from Latin) appeared in the early 11th century to describe the inhabitants of the cities, free from feudal obligations. The bourgeois was not a peasant, a serf, but he was not a nobleman, either (Wallerstein).

The middle class life in the recent past was based on building a professional career, with people relatively rarely changing jobs. Now the positions available a few years ago seemed like those of the Middle Ages. In the modern world, wealth has been increasing, but simultaneously the dependencies become more, (and) not the freedoms. There could not be wealth without dependence as well as freedom for free. Nassim Taleb calls the modern middle class, the bureaucrats, the oligarchs – the Tantalus class, after Tantalus was doomed to eternal punishment. According to ancient Greek mythology, he was made to stand in a pool of water under a fruit tree, but when he reached for the fruit, the branches eluded away, and the water was receding when he bent down to drink. That is an economic situation where one earned more than the minimum wage, but is constantly striving for more wealth, power and privileges. The striving of the middle class are to achieve more and more however the comparisons with the achievements of others led to low self-esteem and desire for more. The modern world generated conditions for the permanent existence of the Tantalus class.

The industrial age had formed the working class. Now, the advanced technologies are destroying the workforce created by the industrial revolution. In rich countries, people are supported by machines, as in the past they were supported by nature. The paradox is that in the modern world, people serve the technology, not the other way round. Craftsmen, who in the past used to manufacture goods to impress the customers, are disappearing now.

Although people now change jobs more often, they do not change their profession and the industries in which they work. One of the risk factors in the modern world is human resources and the unpredictability of employees. Until recently, people rarely changed jobs and professions. According to the transaction cost theory of the economist Robert Coase, the company typically invests in its employees and accordingly suffers losses in case the latter should decide to quit the company. The employee was emotionally connected to the company and preferred to retire from it, he/she was a more valuable asset for the employer, who had invested in his/her training, rather than for the market. According to Coase, the company was trying to find the optimal cost ratio between permanent employees and external subcontractors.

The duration of the large companies' existence in the 20th century was about sixty years that ensured the opportunity for the employees to remain in them throughout their lives. Therefore Coase's theory could be fulfilled. Nassim Taleb calls these employees a man of the company. The employee's social life was so connected to the company that his/her quitting was a punishment similar to ostracism in Athens. At present, the companies exist for 10-15 years, followed by mergers or changes of business, etc. leading to layoffs. In the 90s of the last century after the technological revolution, the advent of the personal computer and the internet, the man of the company was replaced by a man employable. The person employable is not afraid that he might be laid off, but that he must be employable by other companies (Taleb, 2019, p. 135).

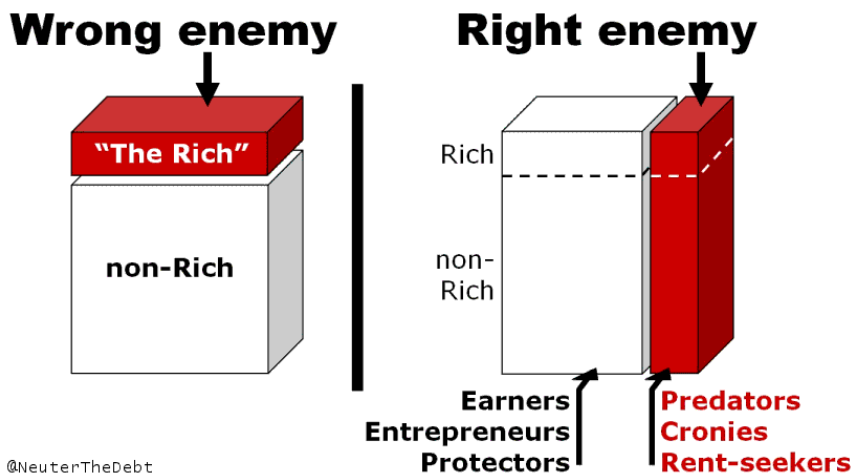
We can include most managers in the Tantalus class. Modern companies are less and less engaged in production and more and more engaged in the political process of appropriation and distribution. Through their lobbyists in politics, companies write the laws by which the state must regulate them. Companies are becoming too strong to obey the market order, and too big to go bankrupt. During the economic crisis that began in 2008, large companies that had to go bankrupt were saved by the state (Гребер, 2020, p. 252).

In the modern world, many corporations build a government with a vertical hierarchy similar to that of feudalism. David Graber describes this in a magnificent way in his book *Bullshid Jobs*. According to Graber (2020), classical feudalism is a system of political redistribution by the feudal lord of goods produced by autonomous producers / peasants and artisans /. Under classical feudalism, there was no autonomy of the economy and politics, as the goods were seized by political means / taxes, fees, etc. / and distributed for political purposes. In the modern world, market principles are used to create such a feudal hierarchy. Graber defines this phenomenon as managerial feudalism. This is usually done with subcontractors and claims efficiency. According to him, conditions are being created for building new and new hierarchies of unnecessary administrative and

managerial positions and subcontractors of subcontractors (Graber, 2020, p.250). Unlike medieval feudalism, in which producers are independent, because to become an artisan you have to go through continuous training and approval of the masters in the guild, modern managerial feudalism with the pursuit of efficiency leads to managers and pseudo-experts gaining more power and depriving producers of autonomy. If at the end of the last century the companies that were efficient redistributed the profits among the workers as bonuses, then the modern „efficient“ companies increase the managers. The class of managers is constantly increasing, creating its own complex hierarchy. Management, according to Graber, creates a masked feudalism in which social status is more important than entrepreneurship and productivity, in which economics and politics cannot be distinguished. In the complex hierarchy of this system, people move up and down it, with the employee's main responsibility being to respect the boss (Graber, 2020, pp. 253, 256, 257). The scale of large corporations allows for this type of hierarchy.

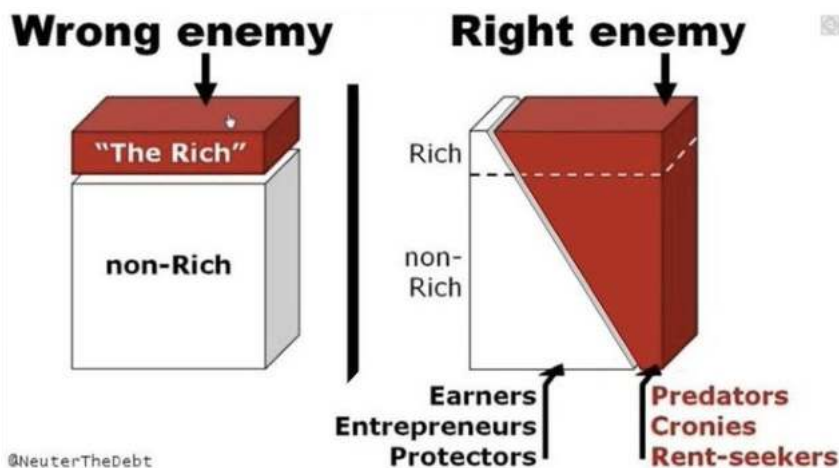
In the modern world, the practices of clientelism have not disappeared. Clientelism has existed as a system since antiquity, it is a political dependence of the client on the patron formulated in Latin **quid pro quo**. It is a stable structure that is being reorganized under different political systems. The clientele of the clientele does not always have great power, but it possesses enough cunning to use the system. Under clientelism, the debtor becomes a client and as such owes to the patron not only service but also gratitude, respect and esteem (Свинтила, 2007, p. 92, 110). The field of application of modern clientelism is wider than in antiquity. Modern clientelism has hidden structures in society that can be represented by a network, which is the tool of complex systems. The study of clientelism requires a complex interdisciplinary approach, as it is a crossroads of politics, administration, markets, society. These dependencies can be considered as a complex network of patron and clientele, which are not limited to a single patron. Through clientelism, unskilled people who use public funds for the benefit of private interests enter the state administration. Modern clientelism creates complex networks of hierarchies, including political parties, administration, and corporations (Roniger, 2004, p.5). Studies of modern clientelism must pay increasing attention to linguistic disguise, ritual codes, trust and distrust, and widely accepted images of appropriate behavior.

The new class division creates new class enemies. In his book, „Neutering National Debt: How Reagan Got It Right, and How Today's Left and Right Get It Wrong“ Steve Conover offers a different perspective on class enemies. The rich in the right-wing scheme have outwitted the system and are gaining income by transferring the risks to others in the system. Here are the seekers of rent, feudal managers, clientele, crowns, etc., who participate in the redistribution of wealth .



Source: Taleb N., (2020), Principia Politica, Stem Academic press

Figure 1



Source: <https://twitter.com/NeuterTheDebt/status/1190251955844763648>

Figure 2

Now there has been a huge industry aimed to fill our leisure time and give us a sense of pleasurable experiences. According to the psychologist Mihali Cheksentmihai, the leisure time has not been structured and people have no idea what to do with it. Therefore, instead of using their physical and mental resources to experience a “stream” – a state of optimal mental experience of enjoyment of creative work, most people watch rich athletes playing in huge stadiums

and listen to millionaire musicians. Mass entertainment and culture have been passive entertainment and mental parasites not aimed to make someone happy, but to provide money to another (Cheksentmihai, 2016, p. 213).

The brain as complex system

New Industries Driven by Old Instincts

Evolution is unpredictable over time, as it takes millions of years for evolutionary changes. The human brain and the instincts of modern man are like those of the hunter-gatherers. The irrationality of human nature has not been overcome in the periods of progress, and throughout history we have witnessed long cycles of increasing and decreasing irrationality. For example, the golden age of the ancient world, when the scientific research was prospering, is replaced by an era of superstition, cult and intolerance. It happened after the Renaissance, too. That cyclic recurrence is repeated and repeated, being part of human nature (Green, 2019, p. 47).

The new industries encourage human instincts suppressed in the past. According to evolutionary economist Terry Burnham, the Technological changes began in agriculture, and later the industrial and information revolutions radically changed the human world. The modern city is an unnatural environment for humans, as is the zoo for the chimpanzee. Our irrationality could be explained by our instincts left over from our predecessors and appropriate to their environment, not to the modern world, where we feel like a fish out of water. The changes in agricultural technology have modified the food we eat, and we are now eating much worse food than our predecessors. In the past, the hunter-gatherers had eaten whatever they could find and their food had been varied and their diet was better than modern ones.

The human brain is designed to look for patterns, the key for survival in a severe natural environment. For example, it had been important for the hunters to find and pursue animals. In the natural environment, these patterns work great, but in the modern artificial surroundings, finding a model becomes a problem. Until the agricultural revolution, all members in the community had gathered food. There had been a division of labour between male and female that affected their brains. The woman in these societies would gather fruits and plants, breastfeed the children while the man would go hunting. Women have developed a memory for the objects' location, as the plants they gathered did not move and men had a better orientation. (Burnham, 2008, p. 253)

People in their natural environment had been rational to a great extent, but changing the environment and getting into different situations they became

irrational. The cause of human irrationality has been comprehensively debated in academia. Many leading behavioural economists, such as Richard Thaler, do not support the idea that human behaviour had anything to do with our previous environment, while according to others our primary instincts are the result of our ancestors' lives in the natural environment (Burnham, 2008, p. 249).

Modern capitalism has been extraordinarily productive; however it is not driven by productivity but desires. Where abundance is available, the main threat is the loss of desire. The economy is beginning to depend on increasingly exotic needs, driven by the constant generation of new products and desires (Gray, 2003 p. 163). That is the reason for the appearance of *neomania* – the disease of a rich society. Novel and new experiences and goods are aging faster than ever. New vices become a defence against the loss of desire. The old industries of rich countries are exported to the developing countries. New professions are emerging to replace those of the industrial age. Many of these industries now satisfy human instincts that had been suppressed or masked in the past. The entertainment, drug and sex industries are growing and the share of the gray economy is getting higher. The new technologies not only transfer information but they induce suggestions and change human behaviour. The financial markets are moved by contagion and hysteria, with the new technologies magnifying the suggestibility. Hypnosis and suggestion drive the new economy, not Keynes and Hayek (Gray, 2003, p.170).

Democracy is linked to the liberal economic policy. Now with the available situation for instilling fear, favourable conditions are being created for power centralization and totalitarianism. Modern totalitarianism operates through the internet. It is now impossible for the dictator to send an army and police to suppress the discontent, but we live in a state of total control. Our existence is a voluntary slavery to new technologies. Once we have agreed to provide personal data, we could be tracked as an IP address – both the places we would visit and the desires and fears we have. The display is monitoring us everywhere (Onfray, 2020).

The Expert Problem and Cassandra's Regret

The technology could give rise to the feeling that everything in life might be fast and simple as the superficial information we retrieve from the internet. It is suggested that it did not take years to acquire skills, but with tricks and a week of practice we might reach professional levels that could be applied to different areas. Social networks have unlimited power to expand our presence, to create the illusion that we have attracted the attention and adoration of thousands, even millions of people. They create the feeling of power and strength that only kings and gods had in the past (Green, 2018, p. 339).

People in antiquity were aware of their own limitations; they believed in fate and the gods, being convinced that what would happen to them was not a matter of choice. Modern man believes that the good life was the result of the choices he has made and the skills he has acquired. The new technologies are changing our lives every day, as we have less and less idea (of) what would happen to us in the future. New unexpected events appear, such as viruses unknown to medicine, which affect the whole of humanity and could collapse the markets for hours. The first victim of the corona virus in 2020 was the economy. The cult to choice reflects the fact that we have to improvise in our lives, as the cult has become a fetish the main feature of which is the lack of choice (Gray, 2003, p.110).

When taking decisions, we do not know the result from them. In ancient Greek mythology, Cassandra was talented to tell fortunes, which was a gift, but at the same time she was cursed by people not to believe her prophecy. She foretold the death of her father, her husband the King of Troy Agamemnon, the fall of Troy and her own death. Helplessly awaiting her future and doom, Cassandra lived in constant pain and regret for her lonely knowledge. The philosophers in the past, the modern experts, the psychologists, unlike Cassandra, believed that people would like to know and plan their future. The technologies create the illusion that we had the capabilities of Cassandra, but ignored her curse. No one in 2019 foresaw Kovid-19, the economic crisis that accompanied it and the change in our way of life. Nassim Taleb called such events Black Swans, while in the scientific literature they were perceived as thick tails, convexities different from the Gaussian curve of the average probabilities.

According to the psychologist Gerd Gigerenzer, humans prefer to live in a certain state of ignorance for the future, defined by him as deliberate ignorance that would save people (from) the curse of Cassandra. If we could have predicted the result, we would not have watched the football match. Gigerenzer argued that the deliberate ignorance existed regardless of people's propensity to take risks, the so-called behavioural economy's aversion to loss. The probable assumption was that people might hypothetically change their decisions and preferences in the future. The deliberate ignorance exists when in various important events in our life such as divorce, death of loved ones, birth of children, etc. we prefer not to regret like Cassandra and keep the pleasure of anticipation.

Conclusion

Life is becoming more and more complex and it is impossible to be explained by the existing theoretical models. Social phenomena are in constant dynamics and change. The changes are then so great and rapid that they are impossible to be covered by the existing social and economic theories. The science of complex systems suggests an approach to the study of these phenomena without the

creation of models, allowing nonlinear behaviour of the systems and the existence of fortuity, uncertainty and insecurity, both of the events that would occur and of their consequences and eventual interactions. We live in an illusionary secure world, but in reality the uncertainty is much greater due to the complex structure of the modern world. The world is becoming more complex, but also more fragile. The dynamics of the events cause ups and downs which have been survived in the past for a long period by several generations. Technology is changing our natural environment, creating dependences and new fears in addition to convenience. Throughout history, complex societies have been vulnerable to collapse. Although the collapse had led to economic readjustment, it might be devastating for a large part of the population, depriving them of the opportunity to produce and consume the essential goods they needed, but also to create favourable conditions and new opportunities. Civilization can be studied as a complex system. The external environment, which includes both technology and scale, determines what type of management a system can adopt. In the last century, Friedrich Hayek compared the rule of centralized states with serfdom. In *The Road to Serfdom*, he argues that complicating one's life leads to deprivation of personal freedom. With the complication of the modern world, capitalism has once again set foot on the path to serfdom.

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