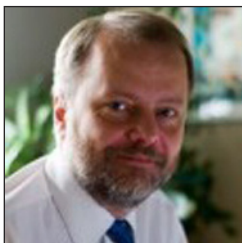


Postmodernity. An ex-centric look at the pressing problems of the modern world



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The fragility of the modern world is a consequence of the way it is globalized – of a thickening network of mutual dependencies and imbalances cultivated over the years. I believe that it was at the root of the war caused by part of the Russian elite in Ukraine

The contaminated Oder River

I finished the essay on August 7, when the full implications of the ecologically catastrophic cascade of events on the second biggest Polish river were beginning to manifest. By carefully observing the development of events on the Oder and their consequences, I understood that this disaster was an excellent illustration of the problem I presented in the essay related to the language we still use to describe the modern world in order to manage it.

Politicians of the ruling coalition were focusing on finding those responsible for the destruction of the creatures living in the Oder. Journalists and the opposition were searching for reasons, also pointing to obvious deficiencies in the efficient and effective operation of state structures increasingly centralized under the rule of PiS (Law and Justice). Whereas I saw how difficult weather conditions – lack of precipitation and weeks of high temperatures – along with many legal and

possibly illegal actions taken locally, triggered Taleb’s cascade of mutually reinforcing events against which the state and society are helpless and which they cannot stop.

Regardless of whether the source of the mass extinction is universally recognized as the ultimate scapegoat responsible for the catastrophe, be it golden algae stimulated by excessive salinity, mesitylene or any other unknown factor, I am aware that the hitherto adopted ways of describing and acting in the modern world not so much prevent but rather produce similar catastrophes.

The language of the modern world has turned into the abstract, timeless, general and universal language of the triumphant mechanics of celestial bodies

When a huge volume of water flowed in the Oder, its misuse by a man, exploiting resources and discharging various substances into its stream – saline water

from coal or copper mines, more or less purified post-industrial water or sewage, and even bicycles or regular garbage – all these „additions” were within the framework of the process described in this essay, non-compensatory and determined by the dominance of water capable of supporting life in the stream of the flowing river.

However, when, as a result of this year’s drought and extreme temperatures, the amount of water critically decreased and its life-sustaining quality diminished, the entire Odra River system and its beneficiaries reached a parlous compensatory state. It has become dependent on random coincidences, on previously not that important but at this particular moment mutually influencing factors, creating a „cascade of events” sowing death, against which we stand helpless solely trying to minimize their effects – in media in case of the rulers, and in real world in case of local governments, firefighters and anglers.

The ecological disaster on the Oder River, the coronavirus pandemic initiated in Wuhan, inflation sweeping through the world and acutely hitting Poland, the system of energy prices disintegrating before our very eyes with unimaginable consequences at the level of states, enterprises or households are examples of coincidences of various circumstances. However, those occurrences change their nature of rare exceptions to be recalled for the generations to come into a principle which subsequent manifestations pass so quickly that soon no one will remember about tons of dead fish or victims of the pandemic.

In order to avoid random coincidences, which are becoming more and more frequent, or – as in the case of the attack on

Ukraine – unintended consequences of deliberately initiated military actions, leading to cascades of events causing local and global catastrophes, let us first start from the point where we, while constantly changing the world, found ourselves.

Point Nemo

The world is at a turning point. This statement is becoming an increasingly common impression of people with different, even extremely different sensitivities and views. It becomes obvious to people with various, also opposing, political affiliations, on all possible scales – from private sphere, in the circle of family and friends, to international, both formal, such as European institutions or international organizations, and informal, such as the World Economic Forum in Davos.

Complexity is horizontal – contextual, temporal, specific and local. We need a different language to describe complexity and its consequences

Edwin Bendyk, to describe emotions associated with the growing awareness of a breakthrough moment in world history, proposed the metaphor of Point Nemo. This point, being the oceanic pole of inaccessibility, was designated in 1992 by the statistician Hrvoje Lukatela in the southern regions of the Pacific Ocean, as equidistant from all land and named after the literary hero – Captain Nemo. Building this emotional metaphor, Edwin Bendyk writes that „the old world is gone, the new one is hidden in the fog of the unknown.” Subsequent crises – which, let me add, have already taken place many times in the history of mankind (in a form

of currency collapses, epidemics or wars) – today, however, give rise to unexpected, far-reaching consequences, depriving us, even more acutely than before, of the sense of a stable and safe shore supporting our minds and the models of the world they create. Anxiety associated with the sense of the lack of visible, fixed points of reference is growing.

Emotions should not be underestimated, even in general terms. António Damásio, a professor of behavioral neuroscience, in his books (*Descartes' Error*, *The Strange Order of Things*) proposes to assume that our emotions are a signal the purpose of which is to stimulate our conscious attention to address their cause. They are the impetus for action as emotions add significance to our perception. They make us realize that something is really important and worth allocating our naturally limited cognitive powers.

Emotions related to the sense of the “breakthrough moment” we are currently in are also shared by me. I partake in Olga Tokarczuk’s intuition that there is a need for new concepts and a new language to be permanently introduced to describe the changes taking place in the contemporary world, with too little intellectual participation on our part. However, before I dare to take up this challenge, I will refer to the key adjective that we use to describe the world today:

Modern

The adjective „modern,” associated with the world which we tried to describe in the dispute between the Platonists and the Aristotelians, appeared in the history of Europe and the world along with the period of the Enlightenment. Philosopher Stephen Toulmin in his book *Cosmopolis*.

The Hidden Agenda of Modernity as the source of the emotions from which the Enlightenment was born, mentions the religious and social confusion resulting from the information revolution being a consequence of Gutenberg’s invention and the epidemics decimating Europe at the time. Then, according to Toulmin, being in need of stability and order, we abandoned the Renaissance philosophy of Montaigne and adopted Descartes, on whose thought the philosophy of the Enlightenment was based.

Rational balancing between fragility and antifragility also requires from the way we are socially organized openness of assumptions, paradigms, heuristics, algorithms of actions

The language of the modern world has turned into the abstract, timeless, general and universal language of the triumphant mechanics of celestial bodies, supported by the incredible achievements of mathematics with its differential and integral calculus, with linear approximations that seem to describe the world so well. In the dispute between the Platonists and the Aristotelians, the scales tipped to the side of the Platonists seeking theories describing everything and global solutions. Modernity has assumed a vertical structure – each new theory explaining the world would be a generalization of the previous one. Any scientific prescription, if it is consistent with a scientifically verified theory, including medical, biological, economic or social, should work anytime and anywhere.

Thanks to this change, the modern world has been subjected to the perfection of technology, allowing people to achieve

measurable and predictable results in controlled circumstances. Technology combined with the seemingly infinitely available resources gave rise to the conviction of the necessity and possibility of ceaseless upgrade and progress.

Science and technology not only put at our disposal an abstract, timeless, general and universal language, but also created measures by which we could make estimates and comparisons – economic measures such as currency systems based on fiat money, GDP, or probabilistic measures such as Gaussian (normal) distribution, anchoring our perception of the average and possible deviations from it. However, the perfection of technology, powered by the language of the Enlightenment era science, desensitizes us to perceiving another dimension of the world around us – its complexity.

Complexity

Complexity is life – not mechanics, not technology. Complex systems are a multidimensional, variable network of interdependencies between the elements of the whole – at the level of viruses or bacteria and at the level of people. Complexity is driven by the creation of new information, its exchange and adaptations of the nodes that make up the network through non-linear by nature feedback loops. It does not fit into the existing, commonly accepted ways of modeling the world. This is where the determinism of classic and quantum mechanics does not work. The deterministic statistics of thermodynamics does not work here, either. This is a place far from the state of equilibrium, where the word (information) becomes a body of adapting – within the three C's, competition, coevolution and

coopetition – elements of a system where everything can happen differently than simple, everyday intuition tells us.

Complexity is not vertical like mechanics, where each new theory of how something works is a generalization of the previous one; when every biological, medical, economic and social prescription should work anytime, anywhere. Complexity is horizontal – contextual, temporal, specific and local. We need a different language to describe complexity and its consequences. Paradoxically, this language, shedding the corset of the Enlightenment universality, turns out to be closer to us, more „human.”

Today, complexity comes into inevitable collision with the perfection of technology. Technology, operating within the predictable, general and universal processes occurring locally, which we use to create a complex anthropogenic system, produces results that are unpredictable globally. This is what Nassim Nicholas Taleb wrote about in *Antifragile*: „Complex man-made systems tend to produce cascades and uncontrollable chains of reactions that reduce or even eliminate predictability and trigger events of enormous scale. Thus, although the level of technological knowledge in the modern world is increasing, paradoxically – it is increasingly difficult to predict what the effects will be. Due to the development of artificial models, the departure from ancient, natural patterns and the decline in resilience caused by ubiquitous complexity, the role of Black Swans is now growing.”

The process of globalization was inherently non-compensatory – the one that was determined by a single factor having an impact on this pro-

ness greater than the impact of the sum of all other factors – the possibility of unlimited growth

The collision of complexity with the perfection of technology is today additionally layered with a powerfully growing, scale-free social networking enhanced by the digital revolution. This means that we can take into account more and more factors in our activities – but which of them are worth it? So, for ever more complex systems, with an abundance of information and necessary quick adaptations, we use ever simpler recipes. As we interact with more and more people, we assess them and interact with them according to increasingly shallow patterns. Our capacities regarding attention, concentration, and exploration of global topics suffice to develop increasingly simpler patterns of action.

The destructive effects of failing to see the consequences of complexity can be seen on both sides of the scale. Local actions have their unpredictable global consequences, the current examples of which are the effects of the pandemic policy in China or Russia's invasion of Ukraine. But also operations implemented on a global scale, for example, the international division of labor, especially in agriculture, have their devastating local consequences, reducing biodiversity, ruining farmers, producing related to livestock and industrial crops pollution that cannot be absorbed and managed at the local level, with significantly lower nutritional value per kilogram of global production. Volatility and unpredictability, driving each other, reduce the duration of trends for which the processes of achieving the goal are designed. As a result, more and more often we do not achieve

the expected goals while incurring costs because the time needed to achieve them turns out to be longer than the trend for which they were planned.

The atrophy of both local and global benchmarks is progressing, eroding along the way the metrics we use to make estimates and comparisons, trying to assign value to our actions. Peter Drucker, one of the most prominent management theorists, described its foundation in the following manner: „If we can't measure it, we can't improve it.” However, managing in an anthropogenic complex system, globalized and networked thanks to the achievements of the digital revolution, requires the quick availability of an infinite amount of information with a common denominator. It is not surprising that models built for the purposes of goal achievement processes more and more often quickly lose their drive or fail completely.

Modeling

In complex systems, modeling encounters significant and completely different limitations than in the abstract, timeless, general and universal modern world based on the perfection of technology. Nature, the living world, of which our human world is an inseparable part, works horizontally, not vertically – through speciation (differentiation), contextually, temporally, in detail and locally. An anthropogenic complex system is governed by Goodhart's inexorable law: Any statistically observed relation tends to fail the moment it begins to be used for regulatory purposes. This law, formulated in 1975 by Charles Goodhart, can be reduced to the following statement: once any measure is treated as a target, it ceases to be a good measure.

This is because, let me add, the basis of complexity is the exchange of information and adaptations between system nodes which use every measure, resource or concept applied to control a complex system in all possible and impossible ways. As a consequence, over time, in an emergent way, impossible to predict both by its creators and later users, adaptations change the dynamics of the system, and the assumptions adopted at the beginning, which are the basis for the proposed measure of achieving the original goal, fail to be good reference points.

There is no spatially uniform (from global to local effects) or time universal (from ephemeral effects through millennia) measure that would be able to take into account all the consequences of human actions

The faster we exchange information and adapt to it, the shorter the lifespan of the factors used to control the system. Here is how the above phenomenon of complexity was described by Nassim Nicholas Taleb: „The world is epistemologically opaque.” If we want the processes of achieving the goal to become at least a little shorter than the trends we want to exploit, we have no choice but to accept and utilize this fact.

The human mind is well prepared for local actions – limited in time, happening in specific circumstances and in a well-defined context. The James Webb Space Telescope (JWSP) is an excellent example of our skills enhanced by the effects of technical perfection. A very technically precise mechanism is currently successfully implementing an incredibly long sequence of steps, which, performed one

after the other with sub-millimeter precision, in extreme temperatures, at a distance further than to the moon, give us an unprecedented insight into the structure and past of the universe. Local operations (processes) – even if technologically complex – can be shaped in such a way as to fully utilize the abilities of our minds to understand, model, measure and control.

People anesthetized by the perfection of technology still assume that an arbitrarily long chain of predictable and relatively simple technical activities carried out locally, but implemented through global connections, will turn out to be predictable, and thus beneficial for all its participants and the anthropogenic complex system as a global whole – even despite the increasingly visible, at various levels and in various areas, negative effects of globalization, contested by both left- and right-wing activists. But let us not be surprised – after all, the belief in the sense and profitability of global chains of connections is still supported by the commonly accepted system of measures.

Measures

Today's measures, according to which we assess the world both locally and globally, were created as a result of the search for abstract, timeless, general and universal reference points describing the dynamics of the modern world. With the help of GDP we evaluate and compare regions, countries, unions of countries or even the whole world, trying to measure its evolution over time. With the help of paper debt-backed money, we assess and compare the profitability of all actions – from individual to global and in all possible time scales. We recourse to Gaussian

(normal) probability distribution, both intuitively in everyday activities and in economic models built for investors, banks and governments, to anchor our perception of the average and the probability of achieving a goal or failing.

Scale-free network – a network which nodes and their impact on its operation cannot be averaged

But the modern world, anesthetized by the perfection of technology, can be described less and less with these measures. The processes of achieving the goal become longer than the trends, which reduces the profits calculated with modern measures. The global world is becoming less and less predictable, and people are increasing bewildered with the parade of Black Swans trampling their hope for a better and safe future. Goodhart's law manifests its devastating power by laying bare the consequences of failing to see or disregarding the fact that nature in general, and the anthropogenic complex system – as its part – in particular, have a horizontal structure.

The search for a new global economic measure that would allow us to better describe the world and formulate social goals, although a comforting testimony to the intellectual ferment of the elites, still does not break the paradigm of not perceiving the consequences of complexity. Instead of GDP, we have HDI (Human Development Index), NEW (Net Economic Welfare), HPI (Happy Planet Index) or GNH (Gross National Happiness) indicators. All these attempts, without finding a way to take into account in macroeconomics the fact that the horizontal structure of the world is contextual, temporal, detailed and local, will not, however,

bring lasting, valuable propositions that can serve as a base.

The consequences of the complexity and crushing potential of Goodhart's law are also seen in subsequent crises and turbulences on the stage of the global financial system. Each use of the value of one's currency for regulatory purposes – political or social – both within the currency zone (most often it is the state, but not always – as in the case of the Euro project) but also to achieve external goals, brings consequences, usually unnoticed at first. Imbalances are growing, discharging in unexpected currency or stock exchange earthquakes, which – like today's inflation – failed to be predicted by banks' or governments' econometric models based on Gaussian modeling of the world of people, which is, after all, a complex system.

If the core measures we apply do not respect complexity and lead to – vulnerable to Goodhart's law – attempts to achieve objectives, what measures should we use as the basis for our actions? According to what criteria to build the probability of achieving the goal?

I will consider as a hint the guidelines proposed by Stephen Toulmin in *Cosmopolis* and regarding the humanization of modernity. He refers to the debate on higher education and academic research in the second half of the 20th century. That debate was dominated by two buzzwords: „excellence” and „adequacy,” as well as doubts whether universities should deal with the preservation of knowledge and its vertical achievements, or with the practical problems of humanity in their horizontal, interdisciplinary dimension. Toulmin argues in the broader context of the role of science and state structures that „the fundamental problem is no lon-

ger ensuring the stability of social and national systems (which underlies all-encompassing theories of modernity – author’s commentary); rather, it is ensuring the adaptability of intellectual and social procedures.” That is, let me add, respecting complexity.

Ordinary information noise, with a negligible or even negative value, is raised by the scale-free nature of the network we create, to the rank of a signal, valuable information by default

Nicholas Nassim Taleb proposes that we replace the predictive measure, which is the probability of achieving or not achieving a certain goal with an assumed, arbitrarily long chain of dependencies, with a non-predictive measure, focusing on measuring fragility. Fragility, as stated by Taleb, is a measure that can be defined for any system. It is measured by detecting the effect of non-linear acceleration of harmful outcomes of operation of the diagnosed system when changing the values of its parameters. Edwin Bendyk wrote exactly about this effect in his eccentric essay, pointing to the growing dependence of the world economy on environmental changes. People, as part of corporate or state ventures, in search of increasingly smaller effects of scale – minute globally but through the effect of scalability considerable, in proportion to local business activities – exert pressure on a planetary scale, making the anthropogenic complex system more and more fragile, susceptible to non-linearly accruing losses.

The opposite of fragility is antifragility, i.e. readiness, openness to new opportunities at low costs and non-linearly in-

creasing benefits. So, for example, to activities that free us from too dense and too wide a network of mutual dependencies, growing imbalances, dangerously long, impossible to comprehend global supply chains, companies too big to fail and ideas to implement on a massive scale actions that were not tested on a small scale, all the while forgetting that the world is epistemologically opaque. Fragility and antifragility are measures that respect complexity.

The method of ordering the management sphere as a result of the digital revolution cannot be – as before – distributing tasks, but distributing knowledge

Robust, resilient systems, based on stockpiling or building buffers, with the non-linearly increasing consequences of complexity – currency crashes, epidemic restrictions or warfare in areas providing strategic resources – will always turn out to be too weak and not resistant enough in the end. This also applies to state structures.

Fragility, which is a signal for reflection and reform proposals, is a sign of imperceptibly growing imbalances and co-dependencies. Growing dependencies, inventories, debt, making decisions that yield small profits, but in the event of failure, result in non-linearly accumulating losses, more and more often making decisions in the context of „I have to” rather than „I can” or „I want to,” are a clear sign of a lack of immunity to the inevitable volatility that is a consequence of the growing level of networking of the modern world.

Rational balancing between “fragile” and “antifragile” also requires from the

way in which we are socially organized the openness of assumptions, paradigms, heuristics, algorithms of actions carried out both at the level of companies that use a social support network or are crucial to the system, as well as in the perspective of local communities or state structures. The key indicator to determine the chance for a rational balance is the attitude towards whistleblowers.

Economics, which studies the effects of interactions between people, nodes of the causal network of the world, is therefore undoubtedly a science subjected to the consequences of complexity – namely contextual, temporal, detailed and local

Whistleblowers, as a dispersed network of radars monitoring the unpredictable effects of local decisions and models, are the early warning system against the inevitable, global effects of locally rational decisions implemented in chains of global connections that are impossible to grasp with the help of hierarchical power networks. And vice versa, they are an early warning system in situations where decisions about the operation of global connections bring about local, negative consequences. By respecting whistleblowers, by listening to them, or by limiting or even exterminating them, we are calibrating our ability to recognize and respond to –

Unexpected effects of global connections

The common expectations towards the lengthening chains of global connections were quite simple. They were expressed in the form of David Ricardo's theory of comparative costs, which showed

the formation of added value in international trade, enabling the maximization of effects while minimizing inputs.

Therefore, the global exchange of goods and services was supposed to bring benefits to all its participants. More developed countries, through increasingly longer chains of interdependence, were to spread development and prosperity to the farthest corners of the earth, liberating its wealth and resources. The invigorating current was to flow from the center to the periphery.

„Freedom cannot be designed. Its development cannot be ensured by checks and balances. This requires a mobilized society, vigilance and assertiveness. Each of these elements is essential!” (Daron Acemoglu and James Robinson)

The general and universal trend to act on a global scale still brought benefits not so long ago. Hans Rosling, Steven Pinker and Johan Norberg wrote about them in their books. Progress, development, wealth seemed to have no limits, neither in time nor in space, and globalization became the binding, universally accepted way of doing things. So why today, before our very eyes, this model jammed?

The general and universal power of globalization, fueled by the perfection of technology and constantly acquired new resources – minerals, energy, food and labor (often slave) – began to run out. The existing resources become too scarce to sustain the process of equalizing the levels between the centers of civilization and the peripheries. The network of interdependencies is becoming too dense, imbalances are accruing, and the level of

predictability of the processes of achieving the objective is decreasing radically.

The crushing power of Goodhart's law is inexorably at work – today it is not the former center that shapes the periphery through chains of global connections. It is the recent peripheries that are trying to use these chains of interdependence to influence their beginning – that is, those who still consider themselves to be at the center.

Based on the perfection of technology and inexhaustible – in relation to the initial size of developing societies – resources masking the destructive effects of the modern measures used, the process of globalization was by its nature a non-compensatory process. One that was determined by the single factor that influenced this process more than the sum of all the other factors – the possibility of unlimited growth.

Nowadays, (...) the split between vertically oriented sciences, where each new theory is a generalization of the previous one, and horizontally oriented sciences, where the emergence of complexity and the crushing power of Goodhart's law manifest themselves, is becoming increasingly clear

Today, while encountering numerous limitations, we begin to feel that the so far unlimited growth is bogged down in processes whose causal structure is of a different nature – it is compensatory. Compensation means that the process in which it manifests itself depends on many factors with a comparable, or at least non-negligible, impact on its final effect. Effective management of goal achievement processes requires a non-linearly growing

amount of information on the factors important in this process, the impact of these factors on the process, their mutual influence, delivered with a common denominator. The denominator should be the measures with which we evaluate the achievement of the goal.

It is worth describing the operation of compensation on a specific example – the production of paper, cardboard and paperboard in Europe. During the period of continuous growth, the development of production capacity on this market was determined by the availability of capital (the machines for the production of cellulose fibers and products manufactured from such fibers are very capital-intensive), wood for obtaining cellulose fibers and water necessary in the production processes. The growth of the paper industry in Europe was brought to an end not only by changes in the paper products market, such as the replacement of paper packaging with plastic ones, the disappearance of certain categories of books under the pressure of the digital revolution (encyclopedias, dictionaries, indexes), the progressive decrease in the demand for paper as an advertising medium (development of Internet), a change in the way information content is commercialized, which resulted in a decrease in circulation of newspapers and magazines – simultaneously progressed the process of outflow of production from Europe to the Far East, of books, copybooks, notebooks and packaging, as well as raw materials for their production – paper, cardboard and paperboard.

Over the years, a temporary balance was established between the greater availability of cheaper products made of paper, cardboard and paperboard, and the market, where there were more and more

products and titles available in smaller and smaller editions tailored to individual needs. The causal structure became more and more compensatory, multifaceted, and the balance tilted towards performing more and more work in Europe and more and more materials in the Far East. In Europe, we applied the automation of manufacturing processes that made differentiated production with ever smaller inputs profitable. At the same time, the „difficult,” „dirty” and energy-intensive processes of producing cellulose and materials, whose European energy and ecological requirements did not have to be and were not met in distant, „exotic” countries, were swept away from before our eyes.

The causal structure of the production of raw materials and printed products was becoming imperceptibly, albeit gallopingly, compensating and dependent on many factors, the sum of which only decided about achieving or not any profitability. The lack of opportunities for upward trends and the high risk associated with capital and energy-intensive production processes led to the systematic shutdown and liquidation of paper machines in Europe.

In the circumstances of a fragile, compensatory balance, the pandemic earthquake has turned everything upside down. In the face of the collapse of the predictability of production in China, books or packaging still ordered there began to be located en masse in Europe. Problems with the regularity of ports' operations and the availability of containers drastically changed the prices of transport between China and Europe, which began to shape as 8:1 – the price of transporting a container from China could be over 8 times higher than in the opposite direction.

In the wake of this, the import of materials – paper, cardboard and paperboard – to Europe practically ceased. At the same time Americans, struggling with the same problems, began to buy on the European market. In the second half of 2021, the prices of materials began to increase sharply – by 50%, 80%, 100%, 150% and even more percent, and their availability drastically decreased. Manufacturers rationed, printheads, if they could afford it, rushed to stock up, saving their skins while making the overall situation even worse.

Postmodernity (...) will therefore be based on adaptability. And its first great challenge will be (...) the impossibility of achieving three political goals simultaneously – democratic replacement of rulers, unlimited economic globalization, and national sovereignty

In the meantime, in a market shaken by pandemic-oriented government decisions, the impact of additional factors has become apparent. The volume of e-commerce was growing even faster than before. So the demand for wrapping paper, cartons and cardboard has increased dramatically. Transport, so important and costly in the printing sector, began to experience the drama of the lack of drivers, whose shortage was estimated at over 250,000 in Europe. At the same time, there has been a sharp increase in energy costs and the potential risk of its unavailability, which has already manifested itself in China, where some factories in the printing sector had electricity on 2-3 days a week. To this compensatory tornado were added otherwise right decisions to stop the production of plastic straws or

disposable dishes, replaced by products based on cellulose fibers, which are also used in the production of paper.

The war in Ukraine has also taken its toll on the situation in the printing industry. The import of raw wood and cellulose from Russia and Belarus to Europe has practically ceased. Production of starch, a refiner for offset paper ensuring its printability and writing properties, in the face of certain limited supplies from Ukraine, a strategic corn producer in Europe, is critically endangered, putting at risk future paper production in 2022.

Not to mention that 95% of the optical brighteners for paper produced in Europe come, for reasons unknown, from China.

Paper, board and paperboard manufacturers in Europe are currently enjoying record profits. Record-breaking, but negligible in proportion to the expenditures necessary to reconstruct the production of paper goods in Europe. What decisions should these producers take, knowing that the causal structure of the printing market is compensatory, unstable and dependent on many, sometimes mutually canceling and sometimes reinforcing factors? How to rationalize the risk of rising energy prices, potential or probable lack of energy supplies, variable product mix dependent on temporary, unpredictable demand for products as well as for cellulose, starch or bleach needed for their production?

What common denominator should be used to generate a measure that will assess the results of the actions taken? Problems with supply chains in all industries are not the only consequences of the network of global connections based on the paradigm of the benefits of globalization. So I will mention at least some of them, without discussing their weight

and significance, for a better understanding of how the mechanism of global benefits is uncoupling before our very eyes.

Cities have been and remain the driving force behind the development of our civilization. The global flow of reasons why money is invested in buying or renting real estate, however, has its local results. Such large agglomerations as Barcelona, London or Berlin are struggling with the process of urban gentrification which is also felt in Warsaw. In Venice, gentrification manifests itself in the city mummification, when real inhabitants, unable to support themselves in exponentially ever expensive houses, are replaced by those who only play the role of landlords while servicing the needs of the tourist industry. These processes probably fit within the framework of generally understood growth, yet we sense the inadequacy of commonly accepted measures that were supposed to illustrate the achievement of social benefits.

Waste management becomes unmanageable. Scraps accumulate in locally non-absorbable amounts as a consequence of global chains of production processes, including cultivating crops, breeding, mineral extraction and industrial activity. And this accumulation is most common in those countries that have trouble with keeping track of emerging imbalances and problems, with corruption and with the enforcement of the costs of the resulting damages from their beneficiaries. On the other hand, those who benefit from the goods produced in these processes do not feel responsible in any way for the need to measure and account for their consequences. After all, in today's terms, GDP and profits measured in fiat money are growing.

Despite many proposals, the problem of measuring human impact on the natural environment, especially in the context of its impact on the carbon cycle in nature, which is the basis for climate stability on earth, seems to be unresolved at the global level. Vaclav Smil writes about this in his book *Making the Modern World*, suggesting that there is no spatially uniform (from global to local effects) and time universal (from ephemeral effects through millennia) measure that would be able to take into account the entirety of the consequences of actions taken by people.

All these unexpected effects of global connections and problems with finding a global measure that could become a clue in which direction to change the world so as not to expose oneself to the cumulative effects of globalization are the consequences of complexity. In the way of limitless growth that underpinned the non-compensatory, more predictable structure of the modern world, came resource constraints that had hitherto masked the destructive effects of fragility. The greatest resource we have always had and still have is ourselves. It is therefore worth taking a closer look at the limitations of using this resource due to the digital revolution.

Increased complexity – unexpected consequences of the digital revolution

The impact of the development of the global World Wide Web, which connects computers, tablets, smartphones, and the related digital communication revolution on people's minds and on the form of the network of interpersonal connections, on which the functioning of the anthropogenic complex system the product of which is human civilization and culture, is based,

was described by me in NK in the text „The Bill Issued to Us by the Digital Revolution.” It tackles the deepest essence of how we, in the process of personal and social development and based on our innate individual sensitivities and resources, self-construct our minds, rooting them in the environment through personal, unique behavioral strategies. By becoming part of the network, we are constantly creating, modifying and limiting our ties to it, creating ever-increasing complexity.

Looking for solutions to the unexpected effects of global connections and the limitations of our potential resulting from the digital revolution, we leave the modern world alongside the economy of complexity

Unnoticed, and increasingly affecting the functioning of the world, is the scale-free nature of how we build the network of our mutual connections strengthening it with the tools of the digital revolution. Scale-free property means that network nodes and their impact on its operation cannot be averaged. Connections between people, especially in the digital space, arise spontaneously, on many levels, in an infinite number of topics and not in a symmetrical manner. Some people are much more connected and watched than others. Much does not mean a little more, even twice as much, but 10, 100, 1,000 and more times more than others. Connections in such a network are of exponential nature. Thus, there is no longer any scale by which we can assess the potential of changes made as a result of interactions taking place in the network. The Gaussian (normal) distribution curve no longer reflects the probability of achie-

ving the assumed goal. A space is created, imperceptibly for us, dominated by Black Swans, or – as mathematicians put it – the probability of rare events gets fat-tailed.

On the grounds of this new quality, new professions are created – youtubers, or even influencers arrive. Many try to be this very networked hub and benefit from it. But transferred from our local experience, average efforts do not bring average results. Waves of adaptation driven by likes and comments appear out of nowhere, herd behavior manifests as a result of chain reactions, creating a temporary crowd with its temporary power, able to change the current status quo from hour to hour. In any dimension of human activity.

At the same time, the chance of dominating the entire network by an above-average networked entity, connected in various ways with others and observed, increases. And in the absence of such, the voices in each matter that evokes strong emotions are divided fifty-fifty, making it difficult or even impossible to make lasting, socially stable decisions.

Each, even the most extreme and strange idea, if it meets the approval of an above-average connected unit, a key node, can spread across the entire network at a pace that does not allow time for its verification or rationalization. That is, at a pace that does not allow for understanding and preparing for consequences.

Ordinary information noise, with a negligible or even negative value, is raised by the scale-free nature of the network we create to the rank of a signal, valuable information by default. Scale-freeness thus brings with it another powerful factor that generates an even greater stratification of influences and resources, previously

described by the Pareto distribution. But the possibility of using this feature of the nature of the network, of which we are nodes, by individuals, even above-average ones, does not match the possibilities of business-organized activities based on the asymmetric ability to detect and anticipate patterns of human activity.

Shoshana Zuboff drew attention to this aspect of modernity driven by exponentially growing amount of information, in her book *The Age of Surveillance Capitalism*. Connections between people are made today mostly using the achievements of the digital revolution. And the network of our digital connections and digitally recorded behavior generates valuable information for those offering their services in this area. Zuboff terms this information the „behavioral surplus.” On its basis, when the collected data that is a side effect of our online activity reaches a sufficiently large scale, the beneficiaries of this information – primarily companies from the GAFAM clan and their Chinese counterparts – reduce our personal sensitivity and individual behavioral strategies based on it to a tiny yet valuable advertising vector in the space of possible states of our mind.

In this way, using information asymmetry, data collectors and processors not only earn money on advertisements targeted individually based on our probable preferences, but also allow predicting and using even not fully conscious sensitivities or preferences, strengthening them with non-linear, emotional effects of digital rewards (likes or recommendations) and spraying behavioral cocaine to chain our attention to the screen for as long as possible (I recommend the documentary-drama *The Social Dilemma*). Thanks to the information obtained on a massive

scale, subjected, as Zuboff writes, to processing by artificial intelligence algorithms, they are transformed into „products for predictive analysis.” These products, in turn, are commercialized in the markets for behavioral forecasting, serving to predict our future behavior, to achieve augmented profits amplified by the scale-free nature of our network of connections.

The potential of surveillance tools that are used to make the digital revolution is noticed not only by business but also by politicians. This potential poses a serious threat to them, however, it also provides an opportunity to strengthen their positions in two ways – by forecasting or by shaping. A threat to the world of management, the dominant part of which is politics, is the collision of the nature of the network of connections between people in the sphere of power and in the sphere of other types of human activity. Power, the basic attribute of which is the validation to take decisions and the resulting responsibility, is organized into hierarchical networks of rights and obligations. All other relationships, which rely on less and less constrained exchange of information, mutual observation and voluntary or forced adaptations bringing along changes and development, are implemented in inherently scale-free social networks, leading to increased complexity.

Let us reject the illusion that we can and want to influence others other than only by the example of our own successes

In today's world, hierarchical networks of power collide with scale-free networks of interpersonal connections crossing the borders of villages, cities, regions, countries, languages, professions and interests.

These links, due to their power nature, increase the managerial burden beyond the current measure. Effective management therefore means the need to find a new formula. As a result of the digital revolution, the method of ordering the management sphere cannot be – as before – distributing tasks, but distributing knowledge. The new concept – knowledge distribution – ordering the sphere of management is inexorably subject to the operation of Goodhart's law, giving rise to the temptation to use asymmetric access to information to achieve easier influence on the managed system.

The digital revolution and its surveillance potential pose not so trivial dilemmas to politicians and elites – whether to use the possibility of predicting human choices and behavior or of shaping them. How to proceed with it – in a distributed, open way, by promoting whistleblowers, leaving the possibility of making decisions as close as possible to the place where the problem arises, as close as possible to the system of distributing knowledge, built to reach the most basic level at which it is needed? Or maybe in a centralized way, by using the collected and processed information, eliminating independent behavior by exterminating whistleblowers, limiting the availability of information or artificially duplicating the one desired by the authorities, nudging people into pre-designed patterns through the use of choice architecture or a reward system, or even providing such information as is needed to achieve the goal, even if it is fabricated or plainly untrue? It is also necessary to acknowledge the basic behavioral dilemma – is it better to manage facts or emotions in order to achieve the goal and keep the power?

Emotions, as I wrote at the beginning, should not be underestimated. They are a signal between intuition, the sum of our life experiences, and – limited by nature – individual cognitive powers, assigning importance to the conflicts, dilemmas and problems we encounter. However, if, in order to manage emotions, not facts, we raise the alarm signal to the level of information that drowns out everything, then we will strengthen the increasingly evident phenomenon of Nashism, induced by the excess of information that we cannot keep up rationalizing in the era of the digital revolution. The emotional division into those who are ours and strangers – a natural, negative, behavioral dimension of excessive, global complexity. As a result, we will face a situation where complexity begins to play against us, bringing about – as an outcome of high social temperature – a close to zero resultant opinion on the matters under consideration, resulting in temporariness and unpredictability of social decisions.

If we reject emotions as the object of management, focusing on managing facts instead, then what management methods can we choose – in the face of the complexity intensified by the digital revolution? Centralized or distributed? Whether to shape the behavior of nodes of the causal network of the world, i.e. people, or monetize predictions of their future behavior? I will look for answers to these questions in economics that respects the phenomenon of complexity.

Complexity economics

Economics as a science has been formulated in the abstract, timeless, general and universal language of the modern

world. But the results were only temporarily satisfactory, and often times disastrous. Dani Rodrik, in his book *Economics Rules*, pointing to the failures of economic advisers, especially in developing countries, writes directly – economics is a horizontal science: „The pool of knowledge in economics does not increase 'vertically,' by replacing worse models with better ones, but 'horizontally,' that is, by creating new models that better explain previously undescribed features of social phenomena. The new schemes do not really replace the old ones, they introduce new dimensions that can be more meaningful in different situations.” Economics, which studies the effects of interactions between people, i.e. the nodes of the causal network of the world, is therefore undoubtedly a science subjugated to the consequences of complexity – namely, a contextual, temporal, detailed and local science.

Complexity – as I wrote – is life. A multidimensional, time-evolving, emergent network of interdependencies between the elements of the whole. Economics is a body of knowledge, based on which we create new models, recipes that work in a specific context, here and now, with an expiration date enforced by Godhart's law, and although we do not know the date, we take into account that those models will not work forever.

Complex systems, which are created by people of different nations, cultures and civilizations, have their own internal memory and dependence on the path, which, although they do not determine them, still exert an indispensable and sometimes dominant influence on the trajectory of their development in the near future. In complexity theory, when systems with many different parameters are con-

sidered, concepts unknown from our everyday experience appear, which are important for those systems future dynamics: attractors and repellers, i.e. basins of attraction and sources of repulsion. No wonder that economics cannot be a science of repetitive patterns and recipes modeled on the mechanics of celestial bodies.

This does not mean, however, that the ways of acting considered and proposed by economics do not have any general framework to which one could refer. Such a framework was proposed, for example, by Daron Acemoğlu and James Robinson in their books. In the book *The Narrow Corridor* they describe the different paths and trajectories of states and societies in the plane between despotic systems – when authority dominates society, and stateless systems – when society prevents the emergence of or, if it has already arisen, strengthens authority. And they point out that there is a narrow corridor of freedom between the power of the state and the power of society embedded in a cage of social norms, i.e. between despotism and anarchy.

In this corridor, the forces of power and society balance each other, bringing stability, freedom and the possibility of development. Although at the same time the authors add: “Freedom cannot be designed. Its development cannot be ensured by checks and balances. This requires a mobilized society, vigilance and assertiveness. Each of these elements is essential!” And one’s place in the corridor of freedom has to be constantly reinvented in the dynamic clash of hierarchical networks of power and scale-free, ever-changing networks of human connections.

The increased complexity that comes with the possibilities of the digital revo-

lution gives us opportunities, unprecedented in the history of mankind, to shape and predict our behavior. But while wanting to take advantage of these opportunities, we also see that they are two sides of the same counterfeit coin, minted as a result of asymmetric access to information, the fruit of the surveillance potential of search engines, social media, training programs on phones, shopping applications or ordinary smart vacuum cleaners that imperceptibly map our flats.

China bases its society governance on the power of shaping, and is also able to monetize the future behavior of its citizens and of all those who use its software and digital devices. Russia also uses the opportunity to shape, although it is too small and too technologically backward a country to be able to fully utilise the surveillance potential of programs and devices in relation to its citizens, not to mention any of such potential export, giving it access to the behavioral surplus of citizens of other countries. The US bases its governance primarily on the power to predict and monetize the behavior of both its citizens and the billions of people enjoying the benefits of the digital revolution around the world. Europe is following suit, along the path mapped out by its Atlantic partner, but it is hampered by modest capabilities on both the hardware and software side, allowing China and the US to capture the behavioral surplus of its citizens.

Of course, the difference between ruling a society by predicting vs. shaping it may seem fundamental. Shaping, as a possibility, directly imposes itself with the centralized mode of governance characteristic of Russia or China, which, according to Acemoğlu and Robinson, are long and far away from the corridor of freedom.

There, the internal memory of centuries of despotic rule is an attractor, a basin of attraction towards growing yet again, after a short pause, despotism. But predicting as a way of managing, the spectacular example of which was the actions of Cambridge Analytica, becomes a repeller – it has the potential to push societies out of the corridor of freedom due not only to the asymmetry in access to knowledge, but also to the possibility of acting in a way that people – subjected to digital manipulation – would never knowingly consent to.

While preparing to part with the vertical dimension of socio-economic sciences, with their abstract, timeless, general and universal language of the passing modern world, it is also worth completing the ongoing transformation of the educational system

What about the dilemma of whether to centralize or distribute management competencies and related responsibilities? The answer to this question is the causal structure of the world around us, mentioned when discussing the unexpected effects of globalization, which used to be characterized by non-compensatory growth based on unlimited – in relation to the size of developing societies – resources. Today, facing the limits of the resources needed to equalize living standards in less developed countries, to the level of those of the G7 or G20, as well as encountering the predictive or surveillance limits of the greatest resource – human freedom and creativity – that the digital revolution has brought with it, the causal structure of our actions became compensatory. It has also become dependent on

many mutually canceling or reinforcing, and thus variable, factors, full of unpredictable cascades and uncontrollable chains of reactions limiting or even eliminating predictability, as Taleb wrote about the present day.

The veil of epistemological opacity of the world is now falling so close that only distributed governance, based not on distributing tasks but on distributing knowledge, has a chance in the long run not only to keep us in the corridor of freedom, but also to keep up with solving conflicts and problems of today's compensatory world. We can observe this directly by following the ways of managing the armies in the war in Ukraine. The distributed structure of state and army management, combined with distributing knowledge to the lowest possible level, where it is needed to make decisions that often have an existential dimension, is the only the reason why Russia, having a material advantage over Ukraine in raw materials, equipment and ammunition, not having to reckon with its soldiers and citizens governed by an overwhelming shaping power, it not winning the war it has instigated.

Looking for solutions to the unexpected effects of global connections and the limitations of our potential resulting from the digital revolution, we leave the modern world with the economy of complexity. This abstract, timeless, general and universal world, where, unable to respect complexity, due to its essence, modernity has failed while struggling with global problems. In search of a new language and new concepts with which we could describe today's reality and its possible future trajectories, I will move to an area where modeling that respects complexity and the measures related to it – fragile

and antifragile – will find their natural place.

A-global postmodernity

As we get to know the world accessible to us – in the dispute between the Platonists and the Aristotelians, as the centuries go by thanks to the organized process called science – we encounter a problem in the field of the methodology of science, which concerns the validation of knowledge. Karl Popper called it the Friesian trilemma. Constructing successive, better and better models of the world around us, we describe it using concepts expressed in sentences. If we do not accept these sentences as dogma, then some sentences will justify, describe and explain the next, and the sequence will be endless. In order to avoid having to rely on dogmas or draw an endless chain of descriptions and explanations, the Friesian trilemma leads us to the conclusion that we can justify some sentences by experience alone.

In this way, we build the foundations of our models of the world, theories of how its individual elements work, and the basis for turning this knowledge to our advantage. Of course, we do this as long as we think that models and theories describe the world well, pass the verification sieve of repeated experiences and experiments, and as long as based on them we can think calmly about the prospects of future generations. If we encounter discrepancies between models, theories and reality, we go back to the basics – to the taken for granted justifications gained through previous experience. This is how all sciences develop, and a spectacular example of this are the successive stages of the theory of the operation of

celestial spheres – from Ptolemy to Einstein – the imagination of which evoked the supposed delight on the face of the wanderer from the engraving in Hammarion's book, described by Olga Tokarczuk in her ex-centric essay.

Breakthroughs resulting from the operation of the Friesian trilemma in the development of science took place in the past in the generational horizon. Nowadays, however, a split is becoming more and more visible at the junction of vertically oriented sciences, where each new theory is a generalization of the previous one, and horizontally oriented sciences, where the emergence of complexity and the crushing power of Goodhart's law operate. In the world of vertical science, it took three centuries for Newtonian mechanics to be replaced by Einstein's theory of relativity. A century passed from the discovery of the internal structure of the atom to the formulation and strong confirmation, thanks to the detection of the Higgs boson, the Standard Model describing the theory of elementary particles and their interactions. In the world of horizontal science, in the last century, successive theories and socio-economic models flash before our eyes faster and faster, like the landscapes outside the window of a speeding train.

Modernity, describing and justifying political and socio-economic dynamics, sought support in solidly rooted, stable and increasingly better vertical generalizations. But to no avail. According to the Friesian trilemma, horizontal sciences such as economics do not bring us everlasting generalizations built one above the other, but only refresh and deliver a new, if unknown, expiration date to the proposed formulas and models that we use to adapt in an ever-changing, emer-

gent, anthropogenic complexity. The dilemma of modernity, described by Stephen Toulmin as stability or adaptability, disappears when we realize the different effects of the Friesian trilemma on sciences with a different structure, dictated by whether or not their task is to describe the emergent effects of complexity.

Postmodernity, respecting the effects of complexity and new measures related to it – fragility and antifragility, limited by the scarcity of resources and the intensified effects of the digital revolution, will therefore be based on adaptability. And the first big challenge will be solving Rodrik's trilemma, described by him in the book *The Globalization Paradox*. The basis of this trilemma is the impossibility of simultaneously achieving three political goals – democratic replacement of rulers, unlimited economic globalization and national sovereignty, and the related choice of which of these goals to give up on.

Which one to choose, given that complexity is contextual, temporal, specific and LOCAL – is self-evident. Globalization in its current form, as I have described it in the case of unexpected effects of global connections, has the ability to mummify or destroy locality – the basis for the operation of complexity. While refreshing – in response to Rodrik's trilemma – the view on the usefulness of globalization in some of its aspects, we can reconcile those contesting it from both the right and the left, and also provide the currently inflamed interstate relations with a new expiration date for their peaceful coexistence.

The fragile nature of the modern world is a consequence of the way it is globalized. A thickening network of mutual dependencies, imbalances cultivated for years, professional and material dependence of

many people on the concentration of production stimulated by the falsehood of poorly understood comparative costs or the production of waste. It was, I believe, the rationale for the war instigated by part of the Russian elites in Ukraine, who wanted to use the accumulated dependencies and imbalances (at the energy, food and demographic level) to change the global – from their point of view unsatisfactory – status quo. The mode of globalization understood in this way becomes a concept by means of which, in accordance with Goodhart's law, those so-far managed want to become managers.

The adaptability of the anthropogenic complex system, limited by such a structure, seems to be beyond our reach. In order to start building the antifragile framework of global cooperation to which we are doomed, we will not avoid a consistent and painful reduction in the density and types of mutual dependence. Step by step, let us give up producing anything, for example, stimulated by fertilizers, antibiotics, herbicides, insecticides, nutritionally low, and therefore not very tasty (the founder of the Slow Food movement, Carlo Petrini, wrote that valuable food is tasty, healthy and correct), too poorly diversified food, leaving behind locally non-absorbable pollution in the process of its production, packed in increasingly sophisticated, labor-intensive, difficult to recycle packaging, sold in retail chains with a long and time-consuming chain between producers and customers, generating high waste of unsold products and using the cash of their customers for other business purposes, instead of empowering their, especially the smallest, suppliers with quick payments. The more fertilizers, antibiotics, chemicals, packaging, disposal – the more GDP grows, the more

taxes the government can register as the revenue. But does it really do us any good? Really?

Do we really need cut roses brought to Europe from Africa by planes, from plantations that do not apply – necessary in the EU – measures reducing harmful chemical protective treatments that do not respect the complexity, so that flowers are available 365 days a year at a similar price? Do we really need armies of made in China plastic Santas or promotional stuffed animals with zero or even negative recycling potential? Do we really need to waste excess energy while polluting the night with the light emitted by hundreds of thousands of buildings in Europe, or to cool offices, restaurants or shops to temperatures hazardous to our health? Let us also consider that waste makes those who serve it with their work, harmfully addicted.

Let us also acknowledge the fact that people are born overwritten – with certain sensitivities and talents. This prevents us from excessive, socially unfavorable competition with each other, namely fighting for the same positions in the system of socially divided labour, allowing – for the benefit of the community – to fill with individual behavioral strategies the entire space of states available to our minds. There are technically gifted people, and there are innovators, there are observers who nurture and develop local ways of dealing with nature, weather and available materials, there are traders and there are those whose specialize in caring and nurturing relationships. Respecting this fact, we will cease to consider it beneficial to catapult work that requires certain sensitivity and skills to the other side of the globe, depriving parts of our own community of the possibility of pro-

fessional satisfaction and life fulfillment. We will also cease to be, in a way that triggers cascades of consequences of excessive dependence, determined by local events with global consequences – wars, crashes, catastrophes, or blackmails of leaders turning their thriving countries into another *caciquismo*.

The construction of an antifragile framework for global cooperation, in addition to reduction of an excessive – in relation to the adaptive potential of a society driven by the flood of information generated by the digital revolution – network of mutual dependencies also requires the ability of societies with different internal memory, history, sensitivity and, consequently, a different trajectory in the space between despotism and anarchy, to formulate common goals. Let us remember, only a common goal – as I wrote in the essay „The World Can Work Better” – allows you to turn a conflict into a solvable dilemma, enabling mutually satisfactory cooperation on a win-win basis. I leave open the question whether and to what extent it is possible to formulate common goals by a society governed in a centralized manner and a society governed in a distributed manner, focused on local adaptability, instead of stability controlled at all costs, and, consequently, on finding permanent solutions to the constantly emerging dilemmas, resistant to being manipulated due to particular, narrowly understood benefits, abusing fragility and existing networks of global dependencies missing alternatives. However, it seems to me that in this context it is worth reading the consequences of the sanctions declared in the context of global conflicts – in particular those adopted after Russia’s attack on Ukraine. They only become mutually beneficial, in the long-term per-

spective, limiting of mutual dependencies, in a situation where social systems with different, divergent in their essence, trajectories cannot formulate common goals.

In an a-global, postmodern world, we still have an impact on ourselves and those similar to us – on societies with similar trajectories and non-conflict attractors. Let us reject the illusion that we can and want to affect others otherwise than just through an example of own successes. May the success of the West be for us, following the advice of Daron Acemoğlu and James Robinson, the Corridor of Freedom and its derivatives: widely available science, subjected to the rigor of falsifiability, supported by a network of independent universities; respect for whistleblowers; openness and transparency of social procedures; distributed management based on the distribution of knowledge; mobilized, vigilant and assertive society. In this context, the digital revolution, by enhancing its shaping and predictive properties, will no longer tempt us to use these possibilities as a false coin.

Today's global dependencies based on maximizing GDP, leading to the situation „I have to because I'm addicted” (fragility), should be replaced with a reflection on the maximization of free energy (formerly called negative entropy by Erwin Schrödinger), a kind of redundancy required by anthropogenic complex systems to sustain the growth of their complexity, with the situation „I can because I have alternatives” (antifragility). Do we really need so many low-quality, cheap products from the Far East, or an avocado from South America, because someone once described this fruit as a magical ingredient of a healthy diet? Is it really worth burning tropical forests to plant avocado planta-

tions for people or soybean plantations to feed pigs consumed by hard-working manufacturers of low-quality products in the other hemisphere, to which societies in the US or Europe have become addicted?

Postmodernity is modernity in the context of the awareness of the inescapable consequences of complexity. It needs *ognosia* defined by Olga Tokarczuk and post-freedom proposed by Edwin Bendyk, the possibility of creating common goals needed to be able to turn conflicts into solvable dilemmas. It needs full use of the available space of our mind states, our sensitivities and innate abilities. While preparing to part with the vertical dimension of socio-economic sciences, with their abstract, timeless, general and universal language of the passing modern world, it is also worth completing the ongoing transformation of the education system. From learning ready made ways of operating, based on paradigms or heuristics that have probably already been seriously strained by the crushing power of Goodhart's law, to learning how to create them.

Without changing and refreshing our language, the concepts we use to build ever more complex societies, learning only what worked some time ago and disregarding the anxieties associated with the disappearance of the existing fixed reference points visible to all, we will remain prisoners of Nicolás Gómez's *Dávila* mockery: „Political scientists in learned ways analyze the growls, barks and grunts of animals loaded onto a vessel, as the currents carry it noiselessly to random shores.”

Should we continue globalization in its current shape, growing a dense network of mutual dependencies based on false

measures (GDP, debt-backed money or Gaussian assessment of the probability of achieving the goal in complex systems), susceptible to threats of wars and blackmail sanctions, sooner or later we will leave Point Nemo as a result of systemic catastrophes, and eventually, as a complex planetary system, we will begin to travel towards some shore. But will this place, to which the currents we do not recognize lead us, be fit for life for us humans?

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CONCEPTS (order arranged by the Author)

COMPLEXITY (the English term probably better reflects the spirit of this phenomenon) – a place 'next to', ex-centric. It does not fit into the existing, commonly accepted ways of modeling the world. This is where the determinism of classic and quantum mechanics does not work, neither does the deterministic statistics of thermodynamics. A place far from equilibrium, where the word (information) becomes an evolving body, within the three C's – competition, coevolution and cooperation of elements of the system where everything can happen differently than simple, everyday intuition tells us.

OGNOSIA (French *ognosie*) – a cognitive process that, reflecting objects, situations and phenomena, tries to organize them into a higher interdependent sense. Colloquially: the ability to synthetically approach problems by looking for order both in the narratives themselves and in details, small parts of the whole. Ognosic impairment is manifested by the inability to perceive the world as an integral whole, that is, by seeing everything separately; when the function of insight into situa-

tions, synthesizing and associating seemingly unrelated facts is disturbed. In therapy, the method of treatment with a novel is often applied (stories are also used in an out-patient treatment). From: Olga Tokarczuk, „Człowiek na krańcach świata” (Man at the End of the World).

POST-FREEDOM (PO-WOLNOŚĆ)- a value of key importance for the organization of individual and collective life in the Anthropocene. In the social dimension, it means recognizing the superiority of solidarity over competition; economic *post-freedom* means detachment of economic activity from the principle of extensive growth in favor of development in accordance with the preservation of social and environmental resources; in politics leads to the application of interdependence, not domination, as a source of power; personal is expressed in the practice of care. From: Edwin Bendyk, „Punkt Nemo. Skok do krainy po-wolności” (Point Nemo. Leap into the Land of *Post-freedom*).

NASHISM – a natural, negative behavioral dimension of excessive global complexity, which is a consequence of managing emotions instead of managing facts. It manifests itself through an asymmetric, Manichean perception of people through the prism of personal, rather innate than acquired sensitivities – those liberal, conservative or libertarian (see: Jonathan Haidt's moral foundations theory). Those who are ours, people with similar sensitivities, have our trust, tolerance and permission to act, even if controversially. The others get distrust, suspicion, hostility. Those who are ours are more understandable, better. Institutions, state and local government companies, theaters, museums and even cleaning companies are

staffed with the „ours” with the approval of the ours and the hostility of the others.

GOODHART’S LAW – states that any statistically observed relationship tends to fail the moment it starts to be used for regulatory purposes. This law, formulated in 1975 by Charles Goodhart, can be reduced to the following statement: when any indicator starts to be treated as a goal, it ceases to be a good indicator. The basis of complexity is the exchange of information and adaptations between the nodes of the system which use every measure, resource or concept applied to control the complex system in all possible and impossible ways. As a consequence, over time, in an emergent way, impossible to predict both by its creators and later users, adaptations change the dynamics of the system, and the assumptions adopted at the beginning and being the basis for the proposed measure of achieving the original goal, cease to be adequate reference points.

BEHAVIORAL SURPLUS – human experience collected through services provided as part of the benefits of the digital revolution with the reservation that otherwise (without collecting) their functionality may be limited. While some of this data is used to improve products or services, the rest is claimed as proprietary surplus, used in manufacturing processes powered by AI algorithms, and processed into predictive analytics products that predict what we will do now, soon, and further on. Prediction products are traded on behavioral prediction markets – markets for predicting future behavior. From: Shoshana Zuboff, *The Age of Surveillance Capitalism*, Zysk i s-ka, Poznań 2020, pp. 19-20.

POSTMODERNITY – modernity in the context of the awareness of the inescapable consequences of complexity. A change in the perception of the world, which is a reversal of the change made in the 17th century, subordinating the perception and description of the horizontal anthropogenic complex system to the language of abstract, timeless, general and universal vertical sciences. It opens the prospect of a synthesis of the intellectual achievements of the Renaissance and the Enlightenment.

SCALE-FREE – a state that complex systems adopt under certain circumstances, permanent in the world of the Internet and social media. In this state the concept of average loses its mathematical sense. Also, Gaussian (normal) distribution – one of the most important probability distributions being the basis for the commonly accepted, intuitive method of modeling the probability of achieving a goal – does not function here.

FRAGILE – susceptibility to cascades and uncontrollable chains of reactions that limit or even eliminate predictability and trigger events of a huge scale in relation to the observed system, turning small initial benefits into losses ruining the process of achieving the goal. It asymmetrically deforms the density of probability of expected outcomes towards potential losses.

ANTIFRAGILE – the opposite of fragile. Openness and readiness for opportunities that require paying small costs but open access to benefits that enhance the process of achieving the goal. It asymmetrically deforms the density of probability of expected outcomes towards potential gains.

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