

The Guidance of Nature*

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Ruth DeFries:

What Would Nature Do? A Guide for Our Uncertain Times

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Mit tenne a természet? Útmutató bizonytalan időkre

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The uncertainty regarding the future of humanity gives rise to growing fear and anxiety. In the past, the future seemed predictable and foreseeable. However, the modern society created by humans is continuously becoming more and more complex, resulting in such a degree of interconnectedness that problems escalate with extraordinary speed. The world is becoming more and more unclear and dangerous, and in addition to earlier significant threats, such as global instability and terrorism, environmental pollution, climate change and the rise of autocratic political powers, we also recently experienced the impact of a major pandemic. Conventional crisis management tools are no longer adequate or sufficient, and it is difficult to ascertain the correct courses of action and behaviour at the level of individuals, economic operators and states. Bearing all of this in mind, the book's author deems it necessary to turn to nature and incorporate strategies which can be observed in nature and have proved to be successful for managing the problems of civilisation.

The author, *Ruth DeFries*, is a professor of ecology and sustainable development at Columbia University and has published more than one hundred scientific papers as an author or co-author. Her main field of research is how people treat Planet Earth, and how it affects society. One clear and central message in her book *What Would Nature Do?: A Guide for Our Uncertain Times* is that the key to the survival of humanity does not lie in the development or elaboration of new forms of behaviour, but in the adaptation of the methods found in nature for the management of complexity. Over the course of four billion years, nature has faced innumerable

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crisis situations and has developed various strategies for their management, which can be beneficial for handling unpredictable situations and the sudden crises that confront humanity.

In her book, DeFries identifies four main natural strategies that have proven useful in dealing with sudden, unpredictable shocks: they are self-correcting feedback, diversification, the application of certain redundancies as opposed to a fully efficient approach, and bottom-up decision-making. These strategies have stood the test of time, and we can take advantage of them in our dynamically changing, interconnected and complex man-made world as well.

One of the keys to the long-term functioning and survival of nature and complex systems in general is *the application of self-correcting mechanisms based on feedback*. In this context, DeFries highlights two important aspects. The first is to pay constant attention to feedback mechanisms created over time, and in relation to human knowledge or modern technologies, we should intervene in them as little as possible, because an effective, convenient short-term solution applied in the opposite manner may trigger unpredictable consequences in the long run. As an example, the author discusses American and Australian firefighting practice, which is based on a German model from the beginning of the 20th century aimed at extinguishing all fires at their start, and the application of this method in regions where smaller local fires played a significant role in preserving the ecosystem and the development of larger, unstoppable fires. Indigenous people never put out local fires as these fires stimulated natural regeneration and the growth of a flora and fauna more resistant to forest fires and bushfires. In order to protect people's property or semi-natural constructions, this practice ceased, which, along with several other factors, played a significant role in the recent occurrence of large-scale fires. Another important aspect crucial for the long-term operation of complex systems is the incorporation of built-in self-regulating circuit breakers, such as halting trading on an exchange, which are based on the lessons learnt from previous, smaller crises.

In addition to self-regulating mechanisms and circuit breakers, the options resulting from diversity are a key element to survival on Earth. In terms of the operation of unpredictable, complex systems, the stabilising power lies in diversity. In nature, the diversity of genes and species, and in conjunction with this the diversity of survival strategies ensure long-term survival. At the level of human civilisation, the diversity of ideas, concepts, knowledge, institutions, languages and cultures plays a stabilising role, similarly to the diversity of species in nature. In this context, it becomes obvious why the disappearance of certain languages and thus cultures, elements of knowledge and belief systems represents a dangerous trend. Regarding survival, this trend runs contrary to nature's rule of diversification, as we cannot know whether or not knowledge that has vanished with the disappearance of

a language as a knowledge-transmitting tool would have been or will be necessary for the survival of humanity.

The work subsequently explains that the basis of modern civilisation is *the operation of networks created by humans*. They ensure the flow of food, electricity, information and everything else necessary for modern life. In order to provide a smooth flow within the networks, the creation of redundant forms is encouraged. As an example, DeFries mentions the circular vein structure of leaves, which keeps delivering nutrients even if part of the structure is damaged, thus ensuring the survival of the whole plant. Although redundant flow paths reduce efficiency and thus may seem unnecessary under normal conditions, they ensure the survival of the system in the case of unexpected or unforeseen extraordinary events. Therefore, their application to an adequate extent is justified. On the other hand, besides their advantages, the operation of the networks may also involve risks. For example, diseases or harmful disinformation can spread very quickly or uncontrollably through them. Observing nature can also serve as a good example for dealing with these risks. Bees, termites and other insects also use techniques that can be applied to the modern civilisation created by humans. Such techniques include, for example, rapid, complete isolation of the infected segments of the network, or the concentration of other available limited protective methods on the parts that are the most exposed to infection. We can find these methods in the management of a pandemic as well.

In nature, cells and other living organisms work without any central guidelines, following their own rules determined by their immediate environment, for example, the way anthills and termite hills are built, or the way birds fly in a V-formation. Although the top-bottom governance model may be effective in many cases regarding the operation of civilisation, for example, in case of the international ban of chlorofluorocarbon gases to protect the ozone layer, bottom-up decision-making practices are much more successful in many other cases. The author gives several examples of the results achieved by the harmonisation of individual interests in certain important matters such as the more efficient distribution or preservation of public goods. In Nepal, placing new emphasis on a model focusing on the cooperation of locals and self-regulation instead of central management played a significant role in stopping deforestation. In terms of controlling population growth, educating women and providing more equal opportunities to them proved to be more effective tools than discipline and regulating the maximum number of children by law. For now, even for climate protection measures, it seems that the only feasible way is to supplement top-bottom measures based on past experience with bottom-up initiatives that increase resilience against unpredictable situations.

In conclusion, the author states that, similarly to nature, *mankind should solve four main problems* in order to manage unpredictable future events: keeping events

under control, ensuring adequate reserves for recovery and adjustment, providing for proper management of the benefits and dangers of networks, and encouraging cooperation and collective action for the appropriate treatment of common goods.

The tools for keeping events under control may be mechanical, which provides a direct solution for a certain problem such as James Watt's solution to ensure constant speed in the steam engine, or they can be based on feedback, such as the application of checks to prevent steep falls in stock prices. However, others are not as obvious, such as the example of smaller, controllable forest fires mentioned previously.

In order to *provide reserves* necessary to combat uncertainties resulting from climate change, pandemics and economic declines, it is crucial for mankind to foster diversification, i.e. to preserve and accumulate food-providing organisms, the water supply and the diverse gene pool necessary for life, on the one hand, and diversified knowledge, on the other.

When *creating networks* that ensure the flow of food and other goods, people and intellectual products, efforts must be made to maximise their benefits, while minimising the risks. The aim is to operate systems that are able to function at a level necessary for the survival of civilisation, even if a certain part of the system is disrupted. It is necessary to prevent harmful effects as well.

Similar to its predecessors, in the long term modern civilisation is also characterised by cyclicity, in which a stage of growth is followed by a decline. In order to make the stagnating stage less stagnant, the declines less severe and the renewal as rapid as possible, the author deems it worthy of consideration to apply a couple of successful strategies of nature, such as *feedback based on self-correction*.

Although the author does not state it explicitly, she comes to a very similar conclusion to that of *Sir David Attenborough* in his biographical documentary *A Life on Our Planet*, which was released in 2020 with great success. During the course of the development of civilisation, we have created an Earth where humans are in dominance, and all other creatures belong to a tolerated and perishing minority. Nonetheless, humans are very much part of nature, and if we continue exploiting and changing the climate and the environment, at best we will put the civilisational achievements of the past ten thousand years at risk, or at worst, we risk our own survival. There have been five mass extinction events on Earth, but life has always prevailed so far. For Attenborough, there is no question that, just as before, nature will survive the sixth mass extinction event as well, which we are heading towards at lightning speed unless we take urgent actions. But the Earth may move forward without us.