



TRANSFORMATION OF SOCIETY AND EDUCATION THROUGH TIME

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The development of humanity and society, we are talking about space (planet Earth) and a period of about 25 billion years. In physics, spacetime is any mathematical model that fuses the three dimensions of space and the one dimension of time into a single four-dimensional continuum. *There were permanent changes in this spacetime, but they were slow, homogeneous, unified and merged with the environment.* With technology, man initiated this change process monotonously, homogeneously and continuously. This process, if it mostly obeyed the laws of nature, took place in harmony with the other users of our natural space, but *the space changed from a natural to a social environment gradually.*

A brief historical outline of the development of contemporary society could be described in the following way: humanity created Society 1.0 when it began trying more intensely to subjugate nature and to create a social environment to its liking, which coincides with the pre-industrial era and later the decline of this period, i. e., with the advent of the first industrial revolution and the invention of the steam engine. Civilization moved from a linear system to a nonlinear one. From that moment on, the changes were no longer monotonous and linear; instead, the linear development curve increasingly became nonlinear. Development was no longer unified and natural, and the pace of development was increasingly dictated by man and no longer by nature. The death of a particular civilization (*homo sapiens*) began, and the development of a new civilization began, dominated by man, "*homo machina*". With the industrial revolutions, the monotonous linear systems began shifting increasingly to nonlinear systems, also known as discretely operating dynamic systems.

From that moment on, as the foundation of an intelligent society, man began to change the natural environment and to adapt it to the extent that the natural environment no longer performed its primary function, to be an environment for all living beings and the entire ecosystem. Referring to a system or systemic approach means referring to cause-and-effect relationships. From this follows Newton's fundamental law of action and reaction, which teaches us that every action and cause has a particular reaction or consequence. Thus, there are always certain causal connections between action and reaction. Nevertheless, this text begins at the end of the story, i.e., at the present time.

Society and Education

In order to be able to understand society, at least partially, one needs to examine how it is influenced by the physical environment, culture, and interpersonal relations – since each of these generates social values and institutions that, in return, change society; for example, education affects the attitude towards one's surroundings (it ultimately also affects the economy) and thereby changes human awareness, behaviour types, cultural relations and the entire society. Some human behaviour types are very elementary and do not need to be adapted since adaptations had already happened. They are now automated responses to internal and external stimuli. Other, more sophisticated types of behaviour demand the recall of pleasant

or unpleasant past experiences and the development of a suitable reaction based upon them. These represent the majority of one's obtained social and cultural knowledge. The third type of behaviour demands more elaborate planning, including imagination and an abstract manner of thinking, whereby a strategy that ensures a less unpleasant or painful action is developed (Kahneman, 2011).

In this context, the primary concern is the social development of an individual and their behaviour in the specific cause-and-effect relationship between a teacher and student, as shown in the education process. The characteristics of today's generations, defined from different perspectives (sociological, technological, psychological, philosophical), and their expectations, are a new challenge for modern-day schools. The educational process must be more closely related to the individual's needs, their personal development and the cultural and virtual environment in which they live. The complexity of all the things affecting the youth of today, the environment, technology, a large amount of immediately accessible information, the possibility of direct communication with technology (for example, ChatGPT) requires a well thought out and quicker response on behalf of the creators of school policies (Markič & Bergant, 2007, Aberšek, Borstner & Bregant, 2014).

Dehumanization of Society and Education

Contemporary society, the society of the future, will require people to develop entirely new knowledge, skills, behaviour types and competencies. In this respect, functional literacies are key competencies for the 21st-century society, known in Japan as Society 5.0, or super-smart society. The qualitative leap from the Industrial society to Society 4.0, also known as the information society, has already been marked by computers and their processing power in virtually unlimited memory capacity. Humans, as intelligent beings, on the other hand, have yet to make progress over the last few centuries in terms of information processing and storage. Given their limited processing power and memory capacity, the shift to a super-smart society, i.e., Society 5.0, can hardly be imagined with just humans as the central characters in these changes. The society of the future, the super-smart society, is undoubtedly (going to be) a technological society, a society of independent and intelligent systems, which are going to be managed and directed by artificial intelligence (AI) because this is the only way to arrive to the so-called super-smart society. In such an environment, it will be vital for humans, who will be increasingly dependent on technology, to communicate with their equals, i.e., other humans, and to understand the technology and AI and communicate with it somehow (Kordigel Aberšek & Aberšek, 2021).

Creating conditions for gaining this kind of experience in teaching and research is politics' primary function and a fundamental mission in education research and development. This takes the discussion back to the beginnings of human civilization, philosophy, rhetoric, paradigmatic changes and, ultimately, the world at large.

Problems of Society of the Future

The problem of humanity is primarily that people need to be more capable and willing to learn from the past. Remember, for instance, one of the first attempts to create an intelligent chatbot, the predecessor of today's large language models (LLM), the chatbot *Tay*. *Tay* is an acronym for "*thinking about you*". *Tay* was an AI chatbot initially released by Microsoft Corporation via Twitter in 2016. It caused subsequent controversy when the bot began to post inflammatory and offensive tweets through its Twitter account, causing Microsoft to shut down the service only 16 hours after its launch. On March 25, 2016, Microsoft had to suspend *Tay* after releasing a statement that it suffered from a "coordinated attack by a subset of people" that

exploited Tay's vulnerability. Microsoft explained this was caused by trolls who "attacked" the service as the bot made replies based on its interactions with people on Twitter. *What can be learned from this* (Aberšek, Pesek & Flogie, 2023)? The fundamental question is:

From whom will AI or LLMs learn, from whom will it receive human knowledge (or knowledge in general), and ethical norms? (Aberšek, Pesek & Flogie, 2023). Can human beings, as authors/creators, really control the further development of AI and LLM by writing certain safeguards into the initial code, or is AI just feeding false information and misleading people about what it is capable of and what it is not capable of?

And finally, the ultimate question must be asked: what does it mean to be human, and what is the future of mankind? Future thought is a vital component of being human. Its importance in our culture is embodied in the mythological figure of the pre-Olympian god *Prometheus* (whose name means "*fore-thinker*"), patron of the arts and sciences. According to the Greek legend, he shaped humans from clay and gave them fire and craftsmanship skills. These are acts that illustrate the power of imagining a novel future, the power of re-humanization of society in future. It doesn't matter what it is called, Society 5.1, or Society 5.2, or even Society 6.0, or Society 7.0 – this is just a denomination. Indeed, if humanity would like to continue to exist, it will have to consider primarily the re-humanization of society, or metaphorically, the society created by Prometheus will no longer exist. Future thought has played a significant role in such human evolution.

References

- Aberšek, B. (2022). The Artificial Life Form (ALF) story. *Problems of Education in the 21st Century*, 81(1), 4–8. <https://doi.org/10.33225/pec/23.81.04>
- Aberšek, B., Pesek, I., & Flogie, A. (2023). *AI and cognitive modelling in/for education*. Springer.
- Aberšek, B., Borstner, B., & Bregant, J. (2014). The virtual science teacher as a hybrid system: Cognitive science hand in hand with cybernetic pedagogy. *Journal of Baltic Science Education*, 13(1), 75–90. <https://doi.org/10.33225/jbse/14.13.75>
- Aberšek, B. (2015). Changing educational theory and practice. *Problems of Education in the 21st Century*, 66, 4–6. <https://doi.org/10.33225/pec/15.66.04>
- Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.
- Kordigel Aberšek, M., & Aberšek, B. (2021). *Society 5.0 and literacy 4.0 for 21st century*. NOVA Science Press.
- Lamanauskas, V. (2022). Natural science education in primary school: Some significant points. *Journal of Baltic Science Education*, 21(6), 908–910. <https://doi.org/10.33225/jbse/22.21.908>
- Markič, O., & Bregant, J. (2007). *Narava mentalnih pojavov* [The nature of mental phenomena]. Aristej.

Received: October 25, 2024 Revised: November 16, 2024 Accepted: December 05, 2024

Cite as: Aberšek, B. (2024). Transformation of society and education through time. *Problems of Education in the 21st Century*, 82(6), 782–784. <https://doi.org/10.33225/pec/24.82.782>

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