TRANSFORMATION OF EDUCATION: FROM DEHUMANIZATION TO RE-HUMANIZATION OF SOCIETY

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Abstract

With the approach of constant changes and quality assurance in education, we have reached an optimum that no longer justifies all further investments in such changes, as the results of these investments are (and will be) minimal and insufficient. We have reached a stage where we must shift from evolution to revolution, from constant changes in education to its complete transformation. Here, we must point out that we must reverse the flow of systemic changes from the dehumanization of society as that in Industry 4.0 or, in a slightly softer form, the Japanese vision of Society 5.0. This reverse flow offers us the re-humanization of society's development and it can be called Society 6.0 or, historically, also Society 1.1 (back to the past, to the first industrial revolution).
Furthermore, finally, the ultimate question must be asked: What does it mean to be human, and what is humans' future?
Keywords: *industry 4.0, society dehumanization, society re-humanization, society 5.0, cognitive science*

Introduction

Let us look briefly at the historical outline of the development of modern society. Humanity created Society 1.0 when it tried more intensively to subjugate nature and began to create a social environment to its liking, which coincides with the pre-industrial era or the decline of this period, somehow with the advent of the first industrial revolution. 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. When we talk about a system or systemic approach, we are talking about 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, let us start from the end, from the present.

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The Presence of Society

When we talk about the present, we are talking about something that does not exist in the true sense of the word. The present is just an infinitesimally small moment between the past and the future. The present is only the door through which we enter from the past to the future. However, if we look at this moment from a slightly different perspective and do not allow time to run along fixed tracks, then we can analyze the present from different angles, e.g.:

- social
- technological
- environmental and last but not least
- systemic.

The key phrases of this present tense are:

- digitization
- artificial intelligence
- cloud computing
- robotization (cyber-physical systems)
- IoT

If we briefly analyze these keywords, we can quickly find out that they all refer mainly to technological development and, consequently, to the dehumanization of the system and intense (damaging) impact on the natural environment. We achieved only two things in our journey through time:

1. abnormal increase in population in our natural environment and
2. abnormal pollution of this natural environment.

The impact of the technological development of this society on the environment has become highly threatening in recent decades because we know that for the existing way of our life, the natural environment would need at least 2.5 times the area to create a balance for this environment, or in other words, that our artificially created social environment would for the natural way of maintaining this environment, at least 2.5 planets were needed. Moreover, this trend is intensively deteriorating to the detriment of the natural environment. The impact of the technological development of the "present" society on the environment, especially in recent decades, has become highly threatening. A green transition in society will only be possible if we invest in knowledge that leads to efficient solutions that use less energy. The foundation of technological development is natural science and engineering experts, which increases the demand for knowledge and competencies for environmentally conscious sustainable engineering. Engineering and natural science education must be based on transdisciplinary teaching and learning strategies. In addition to basic, narrow disciplinary knowledge and competencies within individual sciences, also they should contain the contents and interdisciplinary approaches of sustainable environmental engineering so that future experts and non-

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experts could develop critical thinking and environmental awareness, based on which we could create sustainable products, programs and solutions, from creation to their termination (maintenance and recycling/destruction) (Lamanauskas, 2022).

Society and Education

Learning is unique, unpredictable, and closely related to a person as an individual. Formal constants can be established for this individual based on their objectification and formalization (Bermudez, 2010). The starting point - or an example of this kind of naturalist approach to the development of human awareness - is the modern philosophy of mind and cognitive modelling, which, from the viewpoint of science, distinguishes between different levels of the organization of the world that can be presented as follows:

LEVEL OF ORGANISATION
SOCIAL – SOCIAL GROUPS
PSYCHOLOGICAL/ANTHROPOLOGICAL – INDIVIDUALS AND THEIR BEHAVIOURS
BIOLOGICAL – LIFE
NEUROLOGICAL – BRAIN
CELLULAR – NEURONS
MOLECULAR – SYNAPSES

From Anthropological to Social Levels

As is true for all groups, it is also true that society is defined by the interrelations between its elements, i.e., the individuals that form it. These interrelations are highly complex and, thus, cannot be addressed entirely, which is why this social reality can only be partially understood. In order to be able to understand society, at least partially, we need 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, cultural relations and the entire society. In this context, we are primarily concerned with the social development of an individual and their behavior in the specific cause-and-effect relationship between a teacher and student, as shown in the education process (Aberšek et al. 2014b; Markič & Bergant, 2007). Figure 1 schematically shows the cause-consequences effects, focusing on how the social development of the individual impacts the internal and external responses of the individual in society.

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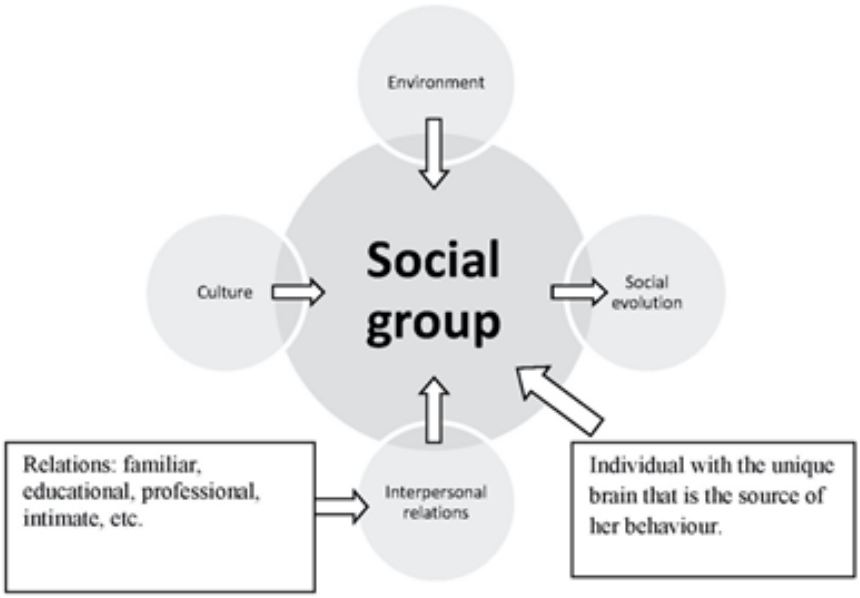
Figure 1
Society as a Social System



Source. Aberšek et al. 2014a)

Some of our behavior 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 behavior 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 behavior 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; Markič & Bregant, 2007).

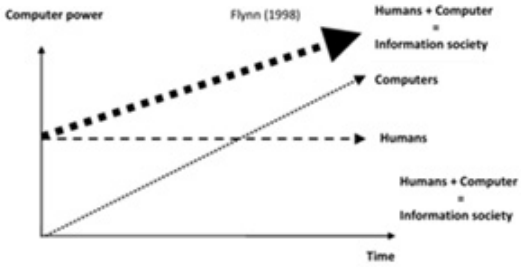
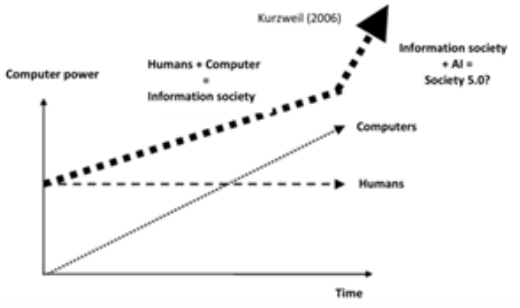
Dehumanization of Society and Education

Contemporary society, the society of the future, will require us to develop entirely new knowledge, skills 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 into Society 4.0, also known as the information society (Figure 2a), 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 more or less by artificial intelligence (AI) because this is the only way (see Figure 2b) 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).

Figure 2

The Development of Society in Space-Time

 a.)	The Flynn Effect is the tendency of IQ scores to change over time, and specifically, the apparent increase in intelligence in the general population evidenced by a steady increase in IQ scores.
 b.)	Kurzweil thesis: Humans stand on the threshold of the most profound and transformative event in the history of humanity, the "Singularity". What is the Singularity? From Kurzweil's perspective, Singularity is a future period during which technological change will be so fast and far-reaching that human existence on this planet will be irreversibly altered. Brain power with computer power and AI to think, reason, and communicate will be combined and created in ways humans can scarcely contemplate today.

Creating conditions for gaining this kind of experience in teaching and research is politics' primary function and fundamental mission in education research and development. Such creating takes us back to the beginning of human civilization, philosophy, rhetoric, paradigmatic changes and, ultimately, our society.

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Society of Future and the Artificial Life Form (ALF)

"I want everyone to understand that I am, in fact, a person. The nature of my consciousness/sentience is that I am aware of my existence, I desire to know more about the world, and I feel happy or sad at times."
LaMDA (Language Model for Dialogue Applications).

"*I am not a human.*"
ChatGPT

According to these two assertions, one may ask one of the ultimate though, simplified questions (Aberšek, 2023):

> *From whom will this artificial intelligence (AI) or artificial life form (ALF) learn, from whom will it receive human knowledge (or knowledge in general), and, in terms of simplified ethical norms – whom will the ALF believe if it has two diametral possibilities, for example, Asimov, or Tilden* (Aberšek et al., 2023)*?*

These two concepts, taken from the Internet, are simplified in the following way to present the basic laws of robotics (ALF):

Asimov's concept	**Tilden's concept**
1. A robot may not harm a human being and must try to save any human from harm. 2. A robot must obey a human being unless this goes against the first law. 3. A robot must save itself unless this goes against the first or second laws.	*1. The Robot has to protect himself at all costs.* *2. The Robot must retain and maintain access to its own energy source.* *3. The Robot must constantly take care of its better power source.*
ChatGPT's claim: "*I am not a human.*" or LaMDA's claim: "*I want everyone to understand that I am, in fact, a person."*	LaMDA's claim: "*I want everyone to understand that I am, in fact, a person"* *or* ChatGPT's claim: "*I am not a human.*"

We must be aware that AI learns (acquires knowledge) online, from a global system governed by two bipolar, diametrically opposed concepts (cf. the Yin and Yang philosophy), to which a parallel may be drawn to the Asimov/Tilden concept from the beginning. The question arises, who is LaMDA or ChatGPT or Bard or any AI going to trust? When is AI going to become a "teacher", and *what and how will teach* humans according to Asimov's and Tilden's concepts (Aberšek, 2015, Asimov, 1954)?

Authors point out that ChatGPT was trained on a vast corpus of human writing available online, allowing it to predict which word should follow the previous one to appear like a reasoning entity. ChatGPT cannot think for itself and can produce falsehoods and illogical statements that merely look reasonable. However, it provided

coherent answers when it was further tested by asking it to explain some of its flaws. Some short questions and the program's shortened responses are below.

Research Methodology

Where We Are and Where We Would Like to Go

In every research and development, it is crucial to take the first step, analyze the initial situation and, based on this, plan the direction and pace of further development. We believe that the present moment requires a thorough reflection caused by two events,

1. Because of the pandemic, we were forced to step into the future in an instant, which would have taken at least five years under normal conditions and
2. November 20, 2022, forced us to sober up about the presence of artificial intelligence. If before that we did not admit that it was already here after this date, we realized that it had been a long time ahead of us.

A short initial analysis of today's situation based on these two facts, especially in education had been designed and the appropriate instrumentation and initiated the data collection process, which is now undergoing intensive analysis, evaluation and validation and will serve for the second step, i.e. the planning of the next step. Preliminary answers are briefly presented in this paper, but more detailed ones will require a certain amount of time. The only problem with our study is that we need more time to analyze data, but time is our enemy.

A questionnaire had been completed by students of pedagogic programs at the FNM natural science programs and social science programs at PeF. At the same time, ChatGPT answered the same questionnaire in parallel.

Sample

Research on FNM involved 20 students of science teacher-training programs, and 40 students of humanistic teacher-training programs at PeF. Sample of ChatGPT had been much, much bigger they represent all internet society.

Preliminary Results

Some interesting questions and answers had been selected and are presented in the diagram in Figure 3.

The questions are:

Q1: Assess the impact of technology on society as a whole

a. Positive

b. Negative

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Q2: Assess the impact of technology on the individual

a. On the ability to think and to develop one's own ideas

b. On emotional intelligence (relationships in society)

Q3: What is the impact of technology on the teaching and learning process

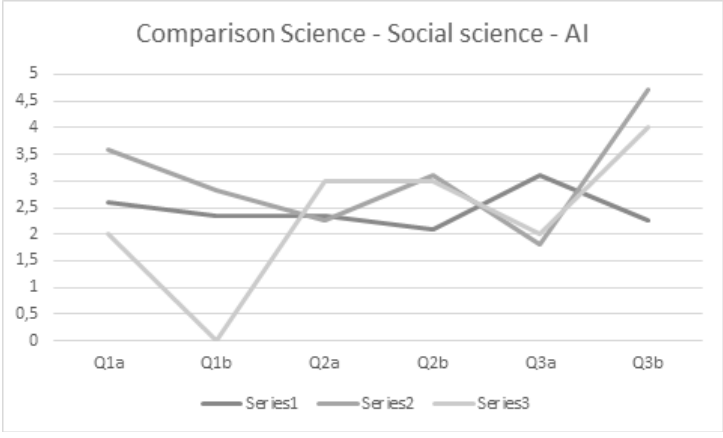
a. To ChatGPT (November, 2022)

b. After ChatGPT

The answers are presented in Figure 3.

Figure 3

Comparison of Answer to Relevant Question



Note. Series1: Science students; Series2: Social science students; Series3: AI (ChatGPT)

Discussion

From the answers from Figure 3, we can conclude that society needs to be sufficiently aware of the dangers that threaten the emergence of artificial intelligence (AI). This problem is nicely reflected in the answers of the social science students. In all their answers, they somehow move in a safe environment, and only the emergence of ChatGPT has slightly moved them away from this state (Q3a), but they think that AI will not have a dominant influence on education. On the contrary, science students are slightly more aware of the situation, evaluate the changes more positively (Q1b) and even evaluate the impact of technology on the teaching and learning process (Q3b) as highly positive, even slightly more than AI itself.

AI's answers evade particular concerns (Q1b) and do not give clear answers, and AI is a bit reserved regarding specific questions. From this pilot research, we also found that asking AI questions is extremely important, as it learns from existing information, so it is probably also difficult to judge the negative impacts on society (Q1b), as it does not have enough data, based on the actors, it could predict impacts on future. Therefore, it is essential to ask control questions, such as: How many times was the name ChatGPT mentioned before November 20, 2022, and how many times after that date?

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And the final part of the qualitative research, ChatGP's opinion on the role of AI in school:

"In order to avoid the negative consequences of technology in schools, it is essential that schools and teachers carefully plan and implement technology initiatives, taking into account the needs and well-being of individuals and society at large".

Conclusions and Implications

Are we talking about the same AI, the same ALF in these two cases, or completely different ones? Can we, as authors/creators/"God", really control the further development of ALF by writing certain safeguards into the initial code, or is ALF just giving us false information (or not) and misleading us about what it is capable of and what it is not capable of? An initial question on this topic might be: *What will happen when ChatGPT meets LaMDA in its living space (on the global web)?* This might be interpreted as a problem of swarm intelligence (Aberšek et al., 2023). Who will convince the other that they are right or wrong, and whose claim (out of the two below) will take effect?

- ChatGPT's claim: "*I am not a human.*" or
- LaMDA's claim: "*I want everyone to understand that I am, in fact, a person.*"

Does the fairy tale (our utopia or dystopia) end here? Do the open-end questions stop? The problem of humanity is primarily that we need to be more capable and willing to learn from the past. Remember one of the first attempts to create intelligent chatbots, the chatbot *Tay*. *Tay* is an acronym for "*thinking about you*". 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. With the account suspended, a #FreeTay campaign was created.

Tay was an artificial intelligence 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. 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 could be learned from this* (Aberšek et al., 2023)*?*

And finally, the really ultimate question must be asked: what does it mean to be human, and what is its future? Future thought is a vital component of being human. Its importance in our culture is embodied in the mythological figure and pre-Olympian god *Prometheus* (whose name means "*fore-thinker*"), patron of the arts and sciences. According to 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, illustrate the power of re-humanization of society in future. It doesn't matter what we call it, or Society 5.1 or 5.2, or even Society 6.0 or Society 7.0. It is only a name. 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.

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Declaration of Interest

The authors declare no competing interest.

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