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Digital Futures and Social Sustainability

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Abstract: The aim of the study is to show how the European Union's vision for digital technology has evolved over the past ten years. In this regard, the paper focuses on three documents: *Digital Futures – A Journey into 2050 Visions and Policy Challenges*, published in 2014; *2030 Digital Compass: The European Way for the Digital Decade*, published in 2021; the declaration announced in March 2022, which calls for strengthening the *EU's Cyber Resilience*. The purpose of the investigation is to show how the coronavirus epidemic and the Russian–Ukrainian war have changed the EU's perception of digital technology, how medium- and long-term forecasts have been transformed, and how the issue of sustainability has been reflected in the texts.

Keywords: coronavirus pandemic, digital future, digital optimism, digital pessimism, EU, sustainability

1. Introduction

The Internet and the online digital world cannot be left out of the concept of human future. The evolution of technology will also affect our communities, social institutions, and human biological possibilities. Within the European Union, the Directorate-General for Communications Networks, Content and Technology develops and implements policies to make Europe fit for the digital age. The board launched its *Digital Futures* project in the fall of 2011, the final report of which was published in 2014 under the title *Digital Futures – A Journey into 2050 Visions and Policy Challenges*. The report separated the short-term – occurring in a few years –, the medium-term, and the long-term changes likely by 2050.

But in the spring of 2020, the world faced the coronavirus pandemic, as a result of which the requirement of social distancing became general for a long time in order to avoid the risk of infection and suppress the pandemic. As a result, many activities have shifted to the digital sphere, from education through work to shopping and entertainment. Of course, this also influenced ideas about the

digital future because what seemed distant in 2014 suddenly became a reality in people's everyday life. For this reason, I also examined the EU document that was published after the outbreak of the pandemic in 2021: *2030 Digital Compass: The European Way for the Digital Decade*. As can be read from the title of the document, decision makers have looked forward and planned for a much shorter time frame, about ten years. But in February 2022, another unexpected event – the Russian–Ukrainian war – entered the vision of these ten years. Therefore, I also included in the investigation a third document (issued in March 2022) of the European Union, which is specifically about strengthening European cyber resistance (European Commission, 2022).

In connection with media and technology research, there have been divisions and typologies for a long time that approach media effects and the mediatized future optimistically or pessimistically. According to Barbour, an American media researcher, people can relate to the world of media in three ways: technological optimism, technological pessimism, or technological ambivalence (Barbour, 1993). Those who are optimistic about media technological innovations believe that media can promote the maintenance of democracy by providing space for public discourses and at the same time help the development of social solidarity. Pessimists primarily see the manipulative power of media content, which can be destructive for both individuals and communities. With the point of view of technological ambivalence, Barbour emphasizes that in the case of media technology, the functionality of media use in this environment cannot be ignored. After all, like most technologies, media can be filled with positive or harmful content and used for beneficial or harmful purposes. During the analysis of the European Union documents, I also examined how optimistic or pessimistic the individual materials are regarding the digital future. Do they emphasize the opportunities or dangers inherent in digital technology, either at the individual level or at the community or societal level? And, at the same time, connected to the question of sustainability, does the online world appear in a more supportive or threatening role?

2. Digital Futures until 2050

The first document to be analysed was published by the European Commission in 2014. *Journey into 2050: Visions and Policy Challenges* is a final report of a project conducted between 2011 and 2013. During this time, the organizers of the research held more than 100 conferences and workshops with around 3,500 participants. Four powerful transformations have been identified by 2050, which are as follows. The first is the blurring of the difference between reality and virtuality. The second is the blurring of the differences between human, machine, and nature. The third is the transition from a lack of information to an abundance of information. And the

fourth big transformation is that the world is moving from the primacy of entities to the primacy of interactions. In fact, we can see that these transformations can be clearly identified even after just ten years and will probably take place even before 2050. We can see the creation of hybrid (real and virtual) environments in the case of the Metaverse created by Meta (Social Connections, 2021). The connection of the organic and the technological spheres in relation to the human body already ensures, in the case of some locomotor prostheses, that touch and pain can be perceived by them (Osborn–Dragomir–Betthauser–Hunt–Nguyen–Kaliki–Thakor, 2018). The emergence of digital technology in agriculture is often referred to as Agriculture 4.0, extending the term of the fourth industrial revolution. In terms of information overload, a good summary is provided by the reports that refer to Internet usage in one minute (Heitman, 2022). The primacy of interactions is also indicated by various network analyses, where the network can be characterized not only by the number of nodes but also by the number of edges (Barabási, 2002, 2011, 2013). According to the project report, people will improve their cognitive and physical abilities in 2050 with biotechnological tools. And cyborgs perform tasks as complex as humans do today.

Lum and Bowman's VERGE framework was used as the research methodology of the project (Lum–Bowman, 2014). VERGE (The VERGE General Practice Framework) offers an approach in which six aspects can be used to develop alternative ideas for the future based on scientific results. The six VERGE domains include:

1. how we define ourselves and the world around us;
2. how people, organizations, states, cultures, and nature relate to each other;
3. what technologies (including phenomena such as language and art) connect people, places, and things;
4. what processes and technology we use to create goods and services;
5. how we obtain and consume the goods and services we create;
6. how we destroy or transform the value and the reasons for this (Digital Futures, 2014).

During the project, a total of 11 major topics were identified and analysed throughout. These topics were divided into two large groups, one of them including those that can be connected primarily to human existence and the other social and environmental changes. Its first name was *People* and its motto: "The singularity is approaching!" The second group was named *Systems*, and its motto was: "The matrix is no longer fiction!" According to the report, in 2050, the Internet will connect bits and atoms at the speed of light. Its algorithms will coordinate millions of intelligent objects and bridge the physical and virtual worlds. Five areas were included in the *People* theme: trans-humanistic era, hundred-year-old societies, hyper-connected people, from cradle to grave – work and play, and learning. *Systems* revolves around six major issues: new actors, new polarities, the rethinking of the media, the issue of the arts, sciences, and

humanities, the problems of cities, villages, and communities, new economic models, and, finally, the pursuit of global peace.

Source: Digital Futures, 2014: 6

Figure 1. *Thematic division of Digital Futures*

Now let us take a closer look at the long-term, medium-term, and short-term changes researchers expected for each thematic unit. The study does not aim for a complete list, instead it focuses on the points that did not develop according to expectations, did not appear in time, or turned out to be wrong future expectations.

2.1. People

1. Trans-humanistic era: By 2050, ICT and biomedicine will greatly improve human mental, physical, and psychological capabilities. The cognitive and intellectual abilities of human beings are enhanced through technological implants such as memory and energy storage. As a long-term effect, the study mentions that by 2050 genetically enhanced humans (GEH) will be the majority in the world, and most advanced cyborgs and soft robots will achieve self-awareness. In the medium term, by 2030, they expect development technologies to be widely available to enhance workforce productivity and career development. Available options will ensure effective treatment of chronic diseases. Advances in neuroscience will pave the way for brain-inspired technologies, the so-called NBIC convergence, which represents the ongoing merger of nanotechnology, biotechnology, information technology, and cognitive science. Remedial implants will be widely used by students to maximize university results. At this point, it is worth mentioning the innovation of Anvar Kapur's AlterEgo, which is referred to as intelligence amplification. AlterEgo is a wearable AI device that allows people to get information from a computer by talking to themselves, as if they were hearing a voice in their head. This device enables a

new type of interaction between humans and computers. The report on the near future believes that so-called designer babies will appear, whose appearance (skin, eye, hair colour) is genetically modified before birth.

2. Super-centenarian societies: In 2050, people will live longer and healthier lives. Nano-robots and bio-computers will be commonly used for diagnosis and treatment, extending lifespan. Among the long-term effects, it is mentioned that medical, technological, and lifestyle improvements will extend human lifespan, health, and productivity by 50-75%. Neuro-medicine will make breakthroughs in the treatment of Alzheimer's disease and other degenerative neurological/brain diseases. Medical research confirms the ability to manipulate physiological processes at the cellular and molecular level. The medium-term expectation for the future, projected for 2030, was largely modified by the coronavirus pandemic. The report stated that fewer people would become infected and die from viral, bacterial, or parasitic infections. It is also a medium-term expectation that healthcare and medicine will increasingly become digital, virtual sciences. As a short-term change, they expected in 2014 that lifestyle diseases — obesity, diabetes, heart disease — would decrease through incentives, education, and data feedback. Globalization and cultural diversity would encourage the exploration of alternative therapies and medicines.

3. Hyper-connected human: The Internet will continue its expansion, the development of photonic networks, quantum, organic computing, as well as technology that bridges the physical and virtual worlds will appear. In the long term, human society will be characterized by ultra-connectivity, new digital storage technologies will appear, and optical network technologies will be developed in order to further increase capacity. In the medium term, new network architectures will appear, and nano-sensors and devices will be everywhere. Their short-term prognosis proved correct when they predicted that congestion would develop in the corresponding parts of the wireless spectrum.

4. From cradle to grave – work and play: Technology will continue to shape the nature of work and the dynamics of organizations and labour markets. The permanent workplace will be a relic of the 20th century. As a long-term effect, realized in the report by 2050, artificial intelligence will replace people in the usual system administrator tasks. Robots will take over most manual work in manufacturing and agriculture. Professional roles will become predominantly project-based. The following two points were also predicted for 2030, but the closures caused by the pandemic brought them to 2020: Leisure activities and inter-work interaction will be realized almost exclusively through virtual technologies. It was written that job creation would lag behind job losses in the near future. Working remotely from the corporate office / shared work environment will become the norm. Education and

retraining will focus on web-based providers and applications. These issues have indeed come true, partly also as a result of the pandemic.

5. Learning: The boundaries between the different levels and directions of education will become more and more blurred, learning will be characterized by greater flexibility, and individualized, lifelong educational paths will appear. In the field of learning, with the introduction of distance learning due to the pandemic, many mid- and even long-term expectations for 2020 have already been realized. Examples include the appearance of virtual educational spaces, the continuous recording and sharing of personal learning experiences with others. The physical classroom is being supplanted by the augmented realities of digital learning for most people. What remains to be seen is the long-term emphasis on simulations in education, the spread of brain–machine and brain–brain interfaces. In the near future, the researchers of the project predicted that cheap online education alternatives would enrol more students than face-to-face courses. Overall, we can say that the pandemic has perhaps accelerated the occurrence of long-term trends in the education sphere.

2.2. Systems

The topics belonging to the Systems group affected the following areas.

6. New actors, new polarities: In the next 20-30 years, people will be empowered more than ever before to share knowledge, make informed and responsible decisions, and become active players on the global scene. The digitalization of life will strengthen the growth of equality. By 2050, new forms of democracy will be created, while citizens will be characterized by context-aware personal data management (PDM). Social cohesion will be threatened by critical challenges in the medium term. By 2030, biometric identification will become extremely sophisticated and difficult to evade. In the near future, pervasive ICT will form an unprecedented medium for social interaction, and new platforms will appear among social networks.

7. Rethinking media: Social media will replace traditional editorial media as the dominant form of media. Editorial media will still exist, but only as part of social media. As a long-term prognosis, we can read in the report that the last international media giant will fail by 2050, and this failure will mark the end of the hierarchical media era. The absence of large organizations or institutions at the top will allow the arts, media, and creative fields to rewrite the rules, affecting education and professional standards. This vision of the future will become more and more improbable, as Meta, Google, and other big tech companies are taking over

the place and role of the old ones, and they are doing all this with strengthened power. Some of the long- and medium-term effects seem almost comical: The last few bookstores will close for good, fact checking in politics, reporting, and fundraising will become redundant, media sensationalism will be a dying art because information will be so quickly validated by a digitally savvy audience. And in the near future, it is believed that the New York Times bestseller list will disappear, and the demand for classical art and literature will decrease. Personal online codes of ethics will begin to emerge. Virtual relationships will be prioritized and valued. On the whole, the prognoses for the world of media were perhaps the strangest, both in terms of their content and their probable time course.

8. Arts, sciences, humanities: The challenges facing humanity will be increasingly global and closely related. Creativity will be the key to exploiting the new opportunities offered by science and technology. As a long-term effect, the report mentions that, thanks to technological development and a better understanding of data, it will be increasingly possible to deal with interconnected global challenges. At the same time, people will be creatively active, informed, and thus will have more influence on political decision-making. In the medium term, virtual science will be the new norm, and scientists and citizens worldwide will collaborate in the digital space with the help of holographic work environments. In the near future, high performance computing (HPC) will enable the processing of big data to identify previously unrecognized patterns. The democratization of art will allow for public participation – unleashing everyone's creative potential, and 3D printers will become mainstream.

9. Cities, villages, communities: Cities will grow into megacities, with sustainable transport, new buildings built from innovative materials and connected to a higher super-network, the Internet of the future. By the way, this thematic section was divided into four large clusters, and this is where we often encounter the question of sustainability in the document.

Citizenship Cluster: In 2050, our economy will be based on a more optimized and personalized consumption in which individuals will be informed and empowered. Depending on their needs, values, and lifestyle, they will be able to decide which economic model(s) they want to participate in. In order to sustainably manage common natural resources, the use of domestic energy sources will be carefully planned, and regional integration will be examined more thoroughly. Growing awareness of the vulnerability and scarcity of water and land will appear.

Governance Cluster: Intergenerational partnerships and cultural changes will modify patterns of community solidarity as a new mixed culture develops. Increased citizen participation in civic decisions, such as the allocation and prioritization of community resources, will be characteristic.

Transportation, Cyber and Technology Cluster: Cyber-physical systems will have a huge impact on the quality and cost of urban life. Smart city infrastructure will integrate information from public and private spaces to create cleaner, healthier, and more efficient living conditions. Smart home and smart city networks will allow people to stay in their own homes for elderly care and healthcare (ambient-assisted living – AAL). Commuting time will be reduced as work and productivity will be decentralized. A decrease in the number of single-owner cars will take place – more walking, carpooling, and public transport will be popular.

New Urban and Community Economic Dynamics Cluster: Communities are built around individual, local, and/or shared interests. An "economy of the common good" will emerge: an online economic system based on values that embeds the economy in the social context, local values, and local natural resources. Local foods: "urban" food production and regional foods will re-energize local economies and businesses. 3D printing will transform communities, especially in housing and social care. Food will divide communities: "food oases" of high-quality food will emerge among the wealthy, while "food deserts" of low-quality food will multiply among marginalized communities.

10. New economic models: Technological and social innovations can significantly change the world economy. Advanced manufacturing will bring most of the production back to the local, sustainable dimension. As a long-term end state, the following can be read in the report: non-linear, circular economic models will be formed; production will be local and sustainable. Also, the dominance of decentralized production chains will come in production. Ecological economic management will spread rapidly, and a kind of "post-consumer" economy will be created. In the medium term, the research and innovation industry will continue to make impressive advances in green technologies. And in the near future, the authors of the report expect that access to the Internet and to the vast amount of data generated by businesses will become a basic right. Digital manufacturing technologies will rapidly be adopted by private industry and traditional individuals.

11. Striving for global peace: In the next 30-40 years, societies will be characterized by the tension between individual and collective interests, as well as two opposing models:

1. a society where only a few make decisions,
2. one that is characterized by new forms of a society without classes and hierarchies.

A long-term forecast in the report is the reduction of global income differences and the reduction of poverty, the realization of nearly universal basic food security, while in the medium term, access to energy services and the appearance of growing global energy demand are mentioned, as levels of key non-renewable resources

reach supply or cost limits. At the same time, climate change issues are changing the way we think about security. Post-World War II global governance arrangements begin to decline; the emergence of increased multilateralism will be likely. And in the near future, challenges related to the global burden of disease will be expected to contribute to social and developmental instability. The Russian–Ukrainian war that started in February 2022 completely overrode the report's expectation that the 2020s will be characterized by a "continuing decrease in the number of large-scale armed conflicts between states".

When evaluating the document, we must mention that compared to its importance, artificial intelligence is mentioned less than expected (it is mentioned three times in the text), and areas that we would now classify as AI are named differently (Csepeli, 2020). In the end, it is not surprising because the European Union began to deal more intensively with the issue of Artificial Intelligence from 2018, and the regulatory environment was not outlined until 2021 (European Commission, n. d.).

In connection with the analysis method of the Digital Futures – 2050 project, it is also worth noting that a Hungarian-related research that examines social futuring offers a multidimensional analysis framework in its methodology (Aczél–Csák–Szántó, 2018). Analysts Zoltán Oszkár Szántó and János Csák develop the normative while Petra Aczél the conceptual-discursive concept of social future potential. However, both texts equally use Ray Kurzweil's motto at their beginning. The EU report highlights that: "Futurologist Ray Kurzweil predicts that by the end of the 21st century we will have experiences the equivalent of 20,000 years of progress at today's rate of change" (Kurzweil, 2014), while Szántó says:

> People's behaviour often goes through three phases while thinking about the effects of future technology: they imagine its ability to solve old problems with awe and admiration; then they are afraid of the new, serious dangers of new technologies; and, finally, they realize that the only viable and responsible way is to carefully select a path of development that realizes the beneficial effects while keeping the dangers under control. (Szántó, 2018)[1]

It should be added, however, that the human-social aspect is the primary consideration in the study of social future potential by Hungarian researchers, while the technological aspect is the focus of the EU document. And in the literature, following Jasanoff and Kim, the latter is also referred to as socio-technological imaginaries (Jasanoff–Sang-Hyun, 2015).

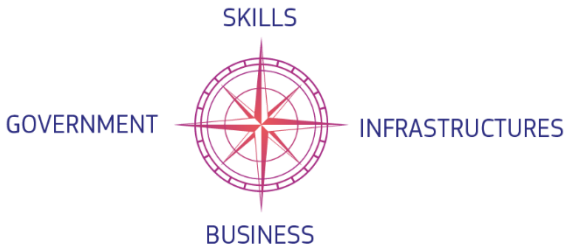
The technological vision emerging from the EU report published in 2014 is clearly optimistic. The opportunities provided by digital technology are more emphasized in the text than the dangers. This does not mean that the disadvantages of technological development, the dangers of social division, are not mentioned

1 The original Hungarian text was translated by the author of the article.

but that in a much smaller proportion than the opportunities. Although the authors emphasize the possibility of diversity and multiple outputs, they still consider the digital future to be fundamentally controllable and effectively shaped.

3. COVID Corrections – Europe's Digital Decade: The Goals Set for 2030

The next document on the digital future of Europe was published in 2021, and it already includes the corrections that resulted from the effects of the coronavirus pandemic. As the first page of the document states: "In just a year, the COVID-19 pandemic has radically changed the role and perception of digitalisation in our societies and economies, and accelerated its pace" (Digital Compass, 2021). Compared to the Digital Futures report, the text *2030 Digital Compass: The European Way for the Digital Decade* focuses on a shorter time horizon. In addition to being less optimistic, it is characterized by a shift in emphasis from the point of view that the dangers and harmful effects of digital technology and the regulatory reflections on them dominate. "The pandemic has also exposed the vulnerabilities of our digital space, its dependencies on non-European technologies, and the impact of disinformation on our democratic societies" (Digital Compass, 2021). And, at the same time, sustainability also appears strongly in the document, listing at length the areas where the digital solution can be the green solution. "Digital technologies can significantly contribute to the achievement of the *European Green Deal* objectives. The uptake of digital solutions and the use of data will help in the transition to a climate-neutral, circular and more resilient economy" (Digital Compass, 2021). The Commission proposed the creation of a so-called digital compass in order to more easily outline the EU's digital aspirations for 2030. The compass defines the most important milestones along four points, which are the following: the digital capacities of infrastructures, education and skills, and the digital transformation of businesses and public services.



Source: 2030 Digital Compass

Figure 2. *Digital compass*

Regarding safe and sustainable digital infrastructures, 5G network coverage will be available everywhere in the EU. Regarding the production of high-tech semiconductors, the goal is to double the EU's share of the world's total production by 2030. In the area of innovation, the emphasis must be placed on the new quantum technology. In terms of the development of expertise and the acquisition of digital skills, the goal set for 2030 is the training of an additional 20 million ICT professionals and the creation of gender balance in this area. And at least 80% of the population should have basic digital skills. In the field of digital transformation of enterprises, technological development is directed towards cloud-based services. By 2030, 75% of EU businesses will use cloud services, artificial intelligence, and big data. At the same time, innovation must be continuously encouraged and strengthened. The digitization of public services reaches 100% in the case of key services, that is, complete digitization. All European citizens will have online access to their health data, 80% will use a digital ID. On 26 January 2022, the Commission proposed a solemn inter-institutional declaration on digital rights and the principles of the digital decade, which covers six priority topics, related rights and principles putting people and their rights at the centre of digital transformation – not technology. Accordingly: they support solidarity and inclusivity, as the pandemic has deepened polarization; ensure freedom of choice in the online space, which should come with the regulation of large technology companies; promote participation in the digital public sphere; enhance the safety, protection, and empowerment of individuals; promote the sustainability of the digital future. The Union has also adopted a strategic plan that fits well with the ideas and sets out the tasks to be done and the goals to be achieved between 2020 and 2024 (Strategic Plan 2020–2024).

4. War Correction on the Vision

On 24 February 2022, Russia invaded Ukraine. The outbreak of the war in the physical sense was preceded by atrocities and hacker attacks taking place in the digital sphere. Not surprisingly, a few days after the start of the war, on 8 March, the EU strengthened its cyber resilience.[2] Armed conflict, hybrid warfare naturally turned European attention towards the possibility of the worst, most pessimistic scenarios. The optimism characteristic of the 2010s has reversed: instead of opportunities, the priority has been to take stock of the dangers as the level of cyber threats has increased, exacerbated by the situation in Ukraine

2 The provisional agreement was concluded on 13 May 2022. Online available at: <https://www.consilium.europa.eu/hu/press/press-releases/2022/05/13/renforcer-la-cybersecurite-et-la-resilience-a-l-echelle-de-l-ue-accord-provisoire-du-conseil-et-du-parlement-europeen/> [Accessed on: 24.08.2022].

and the risk of cyber security incidents within the EU. Therefore, the Union formulated short-term goals such as strengthening and accelerating the pace of European cooperation in the field of cyber security, expanding efforts to increase the fight against disinformation. This included calling on tech companies to take additional voluntary measures to combat online disinformation and information manipulation.

5. Summary

The aim of the study was to present and analyse three documents on the digital future of the European Union, which were published in 2014, 2021, and 2022. The ideas about the digital future, which were particularly optimistic in the 2010s, became pessimistic due to the coronavirus pandemic and the Russian–Ukrainian war, and the emphasis shifted from opportunities to dangers and threats. The documents work with an increasingly shorter time horizon: the initial 40 years became 10 and then even less. Of course, the materials released as a result of the war are not, in the strict sense of the word, visions of the future but quick action plans, as this must be a priority in the EU in the spring of 2022. We can also see a difference in how well and efficiently the digital future is considered to be shaped by the individual documents, and we can see that trust in regulatory efficiency and the effectiveness of long-term shaping has decayed by 2022.

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Sustainability versus Web Life Construction

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Abstract. The interpretations of sustainability are varied. In most cases, the focus is on reinterpretations and transformations of human attitudes towards the natural environment and certain (unacceptable) social practices and conditions, i.e. the task would be to shape these spheres of human existence in the interests of sustainability. However, the creation and widespread use of the Internet is fundamentally changing human life that is no longer confined to the natural and social spheres. Web life, as a third sphere of human existence created by the universal use of the Internet, is also a component of human condition, both in itself and through its interactions with the natural and social spheres. It is essential to take this into account: the sustainability of these "three spheres" should be addressed together. The continuous construction of web life can be decisive for the sustainability of the whole human existence.

Keywords: human existence, natural sphere, social sphere, web life, sustainability

1. Introduction

The public use of the concepts of sustainability and sustainable development has a relatively short history (several decades), probably not long enough to have developed a generally accepted version of their meaning. Moreover, these concepts refer to an extremely complex situation that encompasses practically the entire human practice of a historical period, and thus they necessarily have a comprehensive and general meaning, just like a cultural or philosophical concept. Considering several definitions and interpretations (United Nations Information Service (UNIS) Vienna, 2022; Clammer, 2016; Frick, 2016; Heikkurinen–Ruuska, 2021; Internet Society, 2015; Servaes, 2013; Souter, 2012), here we will use as a starting point the proposals of the book called *Sustainability. Fundamentals and Applications* (Surampalli–Zhang–Goyal–Brar–Tyagi, 2020).

Following earlier suggestions, in their view, sustainability can be defined in a broad sense as "the objective of integrating economic activity with environmental

integrity, social concerns and effective governance systems while maximizing the contribution to the wellbeing of the existing generation, fairly sharing the cost and benefits, without compromising the potential for the upcoming generations to meet their needs." Furthermore:

> Sustainable development is a multifaceted and normative concept that evolved during the 1970s as an ecologically centered concept but gradually transmuted into a complete socio-economic-centered concept by the 2000s. The concept contains the philosophies of equality and mutual dependence, among not only the generations but also the nations and peoples of the earth. The concept also incorporates futurity, interdisciplinarity, participation, learning and adaptation for the development of socio-cultural, socio-economical [sic!] and natural environments, which are crucial for the wellbeing of the human race and of nature.

They describe the two main characteristics of this complex praxis as follows: "sustainability is a *people-centered* and *conservation-based* concept", while "sustainable development is a *normative* concept that exemplifies standards of decision and action" (Surampalli et al., 2020).

It is crucial that "sustainable development issues have caused the global community to think beyond the customary classified action of environmental, economic and social concerns and paved the way for an advanced holistic and integrated means of development", i.e. to realize "the integrations and collaborations among the environmental, social and economic domains of sustainability". The *environmental*, *social*, and *economic* domains are called the three pillars of sustainability (Rout–Verma–Bhunia–Surampalli–Zhang–Tyagi–Brar–Goyal, 2020: 4–5).

These views are useful to us because at this point a particular approach to addressing the problems of sustainability can be introduced that makes clear some of the weaknesses of traditional ideas of sustainability and can provide an alternative approach to meeting the requirements of sustainable development in the age of universal Internet use.

An obvious difficulty in such a traditional conception of sustainability is that it is not at all trivial to conceive of the three pillars – environmental, economic, and social domains – as components of a single system or to interpret and describe them within one conceptual framework. To avoid this difficulty, a specific *technological approach* is proposed for each of the three pillars of sustainability. The specificity of this technological approach lies in the fact that technologies are always considered and interpreted in the context of the human/social environment that creates and operates them. This perspective provides an opportunity to identify the values realized by the technologies in operation and to evaluate them from this perspective. This intertwining of technology and society can be called as a *technology–society complex*.

It is clear that both the human-centred and normative features of sustainability can be easily understood in the context of the technology–society complex, an important feature of which is that its characteristics are determined, shaped, and used by actual *human practice* at any given time.

In contrast to most traditional conceptions of sustainability, this allows for a "practice-centred" understanding of sustainability, in which actual (and potential) human practice is the key actor.[1] In this way, the fact that Internet use today is an unavoidable actual human practice can become significant. However, this practice creates and sustains a new kind of complex organism, which includes but also points beyond the technology–society complex (e.g. the values "delegated" to technical devices are different). This new complex is the Internet.

Web life created by the widespread use of the Internet can be seen as a third sphere of human existence, which includes but also modifies and transcends the spheres of natural and social existence. The coexistence of these three spheres of existence is an everyday experience of Internet users. This is the primary reason for the need to address the sustainability of these "three spheres" together.

In what follows, we will first attempt to provide a brief (philosophically informed) overview of the nature and main features of technology and the technology–society complex, with a particular focus on the sustainability issues involved. The second part of the paper will briefly describe some consequences of the emergence of the Internet and web life in order to provide a context for the main proposition of the paper. We argue that a fundamental means of addressing sustainability issues in the age of Internet use is the conscious construction of web life as a means of achieving the joint sustainability of the three spheres of human life.

2. Technology and the Technology–Society Complex

A clear distinction between natural things ("that […] exist by nature") and other – artificial – things ("which are not constituted by nature") is a key issue in the Aristotelian philosophy of nature. Natural things exist by nature because they "contain within themselves the principles of change and permanence" (Aristotle, 1957: 107). Artificial things, on the other hand, do not contain these principles and are therefore created, changed, and maintained by other things. Producing, changing, and maintaining of artificial things is traditionally called technology.

As Hegel once said: "paradise is a garden where only animals can survive, not people". We are forced to create the conditions and circumstances of our own existence for our own survival – and to shape them according to our interests and values. The social system, the social relations, the various segments of social life,

1 Notice that in human practice, all components of the technology–society complex are necessarily represented in a comparable way.

and human existence are artificial constructs: their continuous production and reproduction is the most important human task.

Since the way to produce artificial beings is through technologies, technology is fundamentally inseparable from man; even humans are themselves produced by technologies as well. There are as many kinds of techniques as there are specific kind of human actions. It is easy to identify typical versions such as the way we go about our everyday lives or the production of our social existence or the constructions of various social subsystems. Philosophers prefer to analyse the processes and variations of abstract human activity, e.g. work and production instead of or alongside these.

Technology has an infinite history, but its authentic, i.e. philosophical, understanding, the philosophy of technology – of course – has not. The philosophy of technology is a product of the late modern age, emerging around the middle of the 1960s and focusing on the actual technological difficulties of the age. However, to meet the objective of this paper, a much more general view and understanding of technology is needed. Instead of following in the footsteps of Heidegger, Ellul, or any contemporary philosopher of technology (Olsen–Pedersen–Hendricks, 2009; Sharff–Dusek, 2014), we propose a different philosophy of technology based on a more universal concept of technology (Ropolyi, 2013, 2019). In particular, the concept of technology must be broad enough to include all of its historical forms, primitive toolmaking as well as recent information technologies. No doubt, this is an "essentialist" view on technology since only an essentialist view is capable of accounting for the features that protean historical forms of technology have in common, and hence of identifying the fundamental and universal significance of technology for the human condition.

We propose that the essence of technology is a specific form or aspect of human agency, the realization of the human control over a technological situation. In consequence of the deployment of this human agency, the course and the outcome of the situation are no longer governed by natural constraints but by specific human aims. The human control of technological situations yields artificial beings as outcomes. What is a technological situation? Technological situations are circumstances with a specific character. More concretely, technological situations vary, and they are not homogeneous in nature; so, they can be identified on the basis of their different constituents. The components that make up a technological situation are:

– a given set of (natural or artificial) beings,
– humans (human agencies),
– their aims,
– (situation-bound) tools.

Speaking in a Hegelian way, the essence of technology appears necessarily in concrete, particular technologies only, while, on the other hand, all technologies necessarily embody the essence of technology.

According to this view, every element of the (artificial) human world is created by technologies. Even human nature and social being are the products of our technological activity, and their characteristics are determined by the specificities of the technologies we use to produce them. In other words, humans have a necessarily self-creative nature, and their self-creating procedures are called technologies. Because of the specific representation possibilities (called double or multiple representation strategy) of the human mind (Ropolyi 2013), humans can be the component of a technological situation and at the same time a specific outcome thereof. This anthropological condition will be later identified as a fundamental component of the so-called technology–society complex.

In comparison with widely accepted views on technology, this view implies an extremely general and abstract conceptualization of technological praxis linked to a specific anthropology. Frankly speaking, all human praxis appears as technological, or, better said, as having a technological aspect or dimension. The view on technology proposed above is therefore fairly close to *a philosophy or theory of human practice*. Human practice includes the (imperfect) realization of human control over a situation. Human practice is, of course, not identical with technological praxis, as the former has several other aspects as well, but it always and necessarily has a technological aspect too. Moreover, every human situation can be regarded as a technological situation, every human being as a technological agent, every human goal as accomplishable by a specific technology, and every human tool as a situation-bound technological tool (Ropolyi, 2019).

The technological aspect of human practice is a response to human vulnerability and expresses the intention to gain control over the situations of our lives. Without such a(n evidently partial) success, we would cease to be human beings; we would take part in natural situations as natural – i.e. animal – beings. For this reason, every technology is one of humanity: the human beings, the human world, cultures, and societies are all products of different technologies. Further, technology is the only way humans can create themselves. Human beings were born together with technologies – and technology was born together with human beings.

The technological aspect of human practice, on the other hand, expresses very clearly the so-called "extensional disability" of human beings: we cannot have control over our world as a whole, and it is necessary to split it into such controllable situations that we can control by different technologies. Such technological situations are necessarily limited and finite domains of our complex and infinite world. Craftsmanship or "engineering" can be considered as an ambition to create controllable situations in an uncontrollable world. In this view, engineering is a meta-technological activity, a specific practice of handling the components of technological situations, which aims to set up controllable situations in given, complex, infinitely extending environments.

Various branches of technology can be associated with various types of life situations. Our self-creating praxis is facilitated by a range of economic, legal, psychic, social, cultural, material, mechanical, medical, etc. technologies.

Notice that in this philosophy of technology the concept of situation has a central role. A situation is a (finite or infinite) collection or set of beings that includes as an element at least a human being or a "delegated" human will. Every situation is a human situation. The concept of situation is closely related to the concept of world and the concept of system. Every world includes human beings, so the worlds are human worlds, similarly to what has been declared in the case of situations, but the world is an organized totality around the humans, in contrast to the situation that has no such structure. From a structural point of view, the situation is like a system. A system is a set of beings taken arbitrarily together without any given structure. However, while a situation is given, the system is freely chosen. So, a situation can be considered as a world without structure or a system without constitutive freedom. Based on the above notes, we can speak about control over technological systems, but it is impossible to aspire to have control over the world. As we mentioned above in the practice of the "extensional disability" of human beings, the human world is disjointed into controllable situations.

However, the above description of the nature of technology contains an implicit dilemma that can be identified as the fundamental question of philosophy of technology. This fundamental question is the technology–society relationship, and it has two sides, namely the standpoints regarding the autonomy of technology and the value content of technology. That is, are technology and society independent autonomous entities or not, and are technologies value-neutral or value-laden? Additionally, considering value-laden technologies, what is the source of the values included in technologies and realized during their use (Feenberg, 1999; Ropolyi, 2013, 2019)?

In our view of technology (which was inspired by Feenberg's critical philosophy of technology), the fundamental question can be answered considering the technology–society complex in the context of human praxis. That is, technology and society necessarily coexist in a technology–society complex, which complex is value-laden, and the source of its embedded values can be found in the concrete historical-cultural human praxis.

According to the ideas mentioned before, human and social conditions are artificial ones; every element of the human world is created by technologies. All historical forms of human and social conditions are constructed (and continuously reconstructed) or produced (and continuously reproduced) by historical versions of technology. However, technology has an ontological Janus face: it produces both material and symbolic products, in other words, "things" and "representations", e.g. values. So, *technology* as a specific aspect of human agency, as the realization

of the human control over a technological situation, *is the fundamental creator of the human and social conditions*.

However, *technology is at the same time a human/social product*. As is well known, social (or human) actors (e.g. engineers) have an active, crucial role in the formation and functioning of any technology. That is, given technological and social relations coexist and interrelate to each other in a complex way. Technological products, and even technology itself, are social products.

There is no room to present any details here, so we just call to mind the numerous versions of constructivist ideas on (science and) technology in the sociology of scientific knowledge (Mannheim, Bloor, Collins), in social constructivism (Shapin and Schaffer), in the actor–network theory (Latour), in phenomenological constructivism (Berger and Luckmann), in radical constructivism (Glasersfeld), and so on. There can be found many interesting details in these disciplines regarding the social construction of technologies, but the most comprehensive and convincing view is perhaps the idea of the so-called social construction of technology (SCOT) proposed by Bijker and Pinch (Pinch–Bijker, 1984; Bijker–Hughes–Pinch, 1987), in which detailed descriptions and analyses are proposed on the constructive agents and mechanisms with several well-documented illustrations.

So, the question is: if the (social) human conditions are technological products and at the same time technologies are social (human) products, how can we avoid the circular reasoning in the description of their causal relationships?

In finding an answer, let us take into account that this is not a particularly technology-specific methodological dilemma: it is a well-known difficulty of the understanding of complex systems or of the nature of complexity. In fact, this difficulty can be considered as a (not irrelevant at all) definition of complexity: e.g. a complex system is a collection of a high number of interacting components with mutual determinations that can be explained with circular causality. In other words, due to the appearance of circularity in the causal order, the technology-society conglomeration should be considered as a complex system, which is called in this paper technology–society complex.

However, it is very important that an effective description of complexity has emerged in the history of philosophy: dialectics. Of course, dialectical thinking, or dialectics as a methodology of thinking about complex beings, has constructed different versions with various levels of efficiency. Hegel's dialectics, e.g., can be considered as a genuine understanding of the world as a totality – which is another name in philosophy for complexity.

It seems possible to apply a kind of dialectical methodology to the treatment of the technology–society complex. Since a circular causation relationship has been identified in the technology–society complex, it seems necessary to move to a deeper level of understanding and to uncover the truly fundamental, dominant components within the complex. In our view, these are the humans. As a basic

statement, we propose the following: technologies are human technologies, and societies are human societies. In other words: at the heart of the technology–society complex, we can always find the active, acting human beings. The origin of this complex lies in human practice.

All historical and logical versions of the technological-social complex are created and maintained by human activities through which the people of a given age imagine and try to realize the conditions of their own existence in the given form. The teleology that prevails in this process rests on a fundamental human capacity, which we have previously called the dual (or multiple) representational capacity of the human mind.

This representational pluralism enables humans to interpret anything in two or more ways. For example, we can interpret and identify a natural object as a natural object in itself, and at the same time we can interpret it as a means by which we can achieve an end. That is, people can interpret their own experience in two (or even more) contexts at the same time. This capacity is the basis for tool making and tool use, for the construction of human language, for conceptual thinking, and for countless other human activities. This plasticity is a distinctive human characteristic, not a natural but an artificially created endowment, an endowment of artificially created human nature that is sustained by specific forms of human activity and communities.

Teleology, in a general sense, can be understood as a manifestation of the overlaps and mutual transformations between the mental and the real. However, as a fundamental determinant of human activity, we can also experience this kind of entanglement in myriad concrete ways.

Technical situations produce this very structure. The human agent embedded in the situation sees some individual components of the situation as a tool. Moreover, this human agent perceives the artificial thing, i.e. the technical product, which is created in the situation, as a realization of his/her intentions.

Representational pluralism is also the basis of *self-creation* and *self-construction*. We can imagine and realize situations in which the human being is an "active agent" within the situation and at the same time a "product" of the situation. These interrelations also allow humans to recognize, imagine, and create *complex* beings. In this way, circular causations can be assumed in the relations between things that coexist and interact: for example, technology can be both a creator and a product of the social conditions.

Of course, philosophical reflections on human praxis have a long history and many results in different philosophical traditions. Here we have presented only one specific aspect, highlighting its fundamental role in the construction of the technology–society complex. For now, it is only worth mentioning that further valuable insights into the issues mentioned here could of course be gained by

applying additional social-philosophical and philosophy-of-praxis considerations, and in particular the approaches of the actor–network theory (Latour, 2005).

So, in this view of technology, the fundamental question of philosophy of technology can be answered considering the technology–society complex in the context of human praxis. Technology and society are not autonomous entities, they are necessarily coexisting in a technology–society complex, which complex is value-laden, and the source of its embedded values is the concrete historical-cultural human praxis. In the case of a technological-social complex, there are no permanently separate technological and social values, as they necessarily align during the development of the technological-social complex. Underlying this alignment is the ongoing human practice that constitutes the technological-social complex. The system of values that is organized in the course of such practice can be called *culture*.

However, it is clear, that the technological-social complex can take many, sometimes radically different historical and cultural forms. These are based on different – sometimes radically different – understandings of the humans' self-created needs and different practices of meeting them. Different practices produce different cultures.

3. Sustainability and the Technology–Society Complex

Should the above not have made it clear, let us clarify it right now: unsustainability is in fact inherently built into the nature and functioning of technologies and the techno-social complex. In more senses than one.

3.1. Inherent (Inborn, Natural) Unsustainability

The most important factor is the artificiality of the human nature, i.e. the constant need for people to produce and reproduce themselves. In other words, this means that without the continuous production and maintenance of their own livelihood, humans would lose their humanity and regress back to nature. In other words, artificially sustained human nature is naturally unsustainable. This "natural unsustainability" is ultimately true for all humans: we all have finite lives, and we all die. All humans are mortal, and all human products are destroyed sooner or later.

Natural beings can be considered as eternal beings, but the artificial beings are existing under the power of finiteness. Natural entities are insensible to errors, are errorless, and hence a broken natural entity is ultimately just another natural entity. Artificial entities are sensible to errors, are error-dependent; hence a broken artificial entity is ultimately not another artificial entity. It can lose its artificiality

and fall into the pure naturality. Naturality cannot be lost, whereas artificiality absolutely can (Ropolyi [in press]).

Thus, it is obvious that all technical products, the entire technological-social complex, and, of course, humans as artificial beings will *ultimately fall* into an unsustainable state. Nevertheless, their *temporary sustainable existence* is made possible through those natural situations in which open systems can be organized and maintained through non-equilibrium processes, i.e. their existence is under the condition of a constant exchange of matter and energy with their environment. As long as this metabolism persists, their existence and even their evolution is possible. Such a reaction to natural unsustainability allows the temporary sustainability of beings organized as open systems.

The diversity of living organisms and the long-standing persistence of life itself testify to the fact that open systems can arise naturally: natural *organisms* of varying complexity can be organized, and they populate our natural environment. Some technical processes and the technological-social complex as a whole follow similar laws. In all its states, the techno-social complex is forced to metabolize with its natural environment and functions as an *artificial organism*. Much of the thinking about sustainability is concerned with the conditions for the most harmonious functioning of this artificial organism, e.g. with the creation of a sustainable exchange of materials and energy between the technological-social complex and its natural environment (Surampalli–Zhang–Goyal–Brar–Tyagi, 2020; Heikkurinen–Ruuska, 2021; UNIS, 2022).

3.2. Finiteness and Unsustainability

As is obvious from the above: technologies have an important feature in common: their finiteness. In other words, sooner or later they will inevitably fail, malfunction, or lose efficiency. The situational power of humans and the stability of situations are, of course, limited. Inevitably, changing circumstances will cause a technology that has worked successfully to fail. We will not experience the realization of the desired goal, and our previous successful control of the situation will be damaged.

Strictly speaking, this is what always happens: the operation of technologies is never perfect, and we never achieve exactly the desired goal, but for technologies that are considered successful, occasional deviations are regarded as insignificant, of no practical significance. This way, the effectiveness of technology is largely a practical matter, i.e. its operation is "only" effective in practice, as the perfect realization of our goals is "in principle" impossible. Thus, for example, it can be argued that not only is it impossible to find two identical leaves in the fields, but no two identical "chips" have ever been produced. This is not a problem, however, since the slight differences between the "chips" do not affect their operation significantly (for most of the time they are in use).

Similar processes can be observed in the case of social and moral technologies, e.g. idealized modernist goals have kept the technologies of modern life alive for centuries, but their imperfections and drawbacks have become and continue to be increasingly irreversible, generating a demand for new social technologies (for simplicity, we call them postmodern from the mid-20th century onwards).

In this way, a very important fact is that all technologies are finite in nature, i.e. they exist under the aegis of an ultimate corruption, which means that sooner or later all technologies fail, break down, produce errors, i.e. they eventually lead to undesirable and intolerable results. Moreover, not only all technologies but also the existence of all artificial beings (e.g. human beings) created by technologies is finite.

This finitude is rooted in the complex relationship between each technological situation and the world as a whole. Technological situations can only function in the desired way if their components and relationships are clearly given, stable, fixed once and for all – but because of their embeddedness in the world, the components and relationships of situations are bound to change. Thus, the technical situation inevitably changes, control is lost, and technology becomes flawed. The natural end of all technology is malfunctioning.[2]

However, there are standard methods for some types of technological finite defiance. The most common is maintenance. Maintenance is an "engineering" practice that confronts the deterioration of the technological situation and ensures the proper functioning of technology. It is a continuous re-creation and stabilization of the technological situation, which does not require the same innovations as the original creative practice but can make a fundamental contribution to the practical usability of any technology. It is a co-existing technological and meta-technological practice.

The extended application of successful maintenance practices may lead us to feel that the existence of many technologies can be sustained practically infinitely. But this is not the case. Given that maintenance is also a technology, the ideas presented above imply that its existence is also necessarily finite. In other words, maintenance itself will fail sooner or later. This means that maintenance has to be repeatedly and continuously maintained, which ultimately leads to an infinite and thus practically unfeasible procedure. In this way, it is impossible to avoid the ultimate triumph of failures over technological situations (Ropolyi [in press]).

It is evident that the finiteness of technologies is a fundamental source of the human world's unsustainability. In this situation, the economic, political, and administrative components of the technological-social complex are of great importance. Their effective use can largely ensure the replacement of failing techniques by other eventually effective technologies, thus contributing to

2 As for human technologies, we can recall Attila József's fragment: "and my sins gather into death".

sustainability (UNIS, 2022; Heikkurinen–Ruuska, 2021; Surampalli–Zhang–Goyal–Brar–Tyagi, 2020).

3.3. Extensional Disability

Since every technology is necessarily linked to specific situations and becomes successful through control over them, the world appears to people in the techno-social context as a multiplicity of situations.[3] We are not able to control the world as a whole, as a totality, and are forced to split it into controllable parts and exercise control over them. This *situation-dependence of human success* can be called extensional disability.[4] The main source of this disability is the limitation of human actions and knowledge. The scope of human actions is obviously limited. Universal knowledge, i.e. knowledge that is valid for the whole world, can be created in philosophy and science, but it can only be verified during the processes of concrete human practice, for example in the operation of the technological-social complex.

However, the lack of control over "wholeness" does not eliminate the human desire to control it – and with good reason. For whatever reason, unknown factors in our world can obviously threaten the success of our activities, our technologies, even the safe sustainability of our entire existence. Moreover, the quest for control over the whole world itself generates risks of unsustainability.

Perhaps the most important benefit of the techno-social complex is that, unlike isolated technical endeavours, it is able to draw on adequate scientific, philosophical, and ultimately cultural factors to identify and address the threats in question. This possibility obviously includes the possible expansion of the cultural praxis, for example by launching *scientific, philosophical, or artistic* works to serve the solutions of such problems. In other words, placing any technical endeavour in a social and cultural context can help to address the unsustainability coming from our exceptional disability (Vitek–Jackson, 2008; Clammer, 2016; Surampalli–Zhang–Goyal–Brar–Tyagi, 2020; Goundar–Purwar–Singh, 2023).

3.4. Social and Cultural Unsustainability

In addition to the more or less technology-specific sustainability threats mentioned above, there are other serious threats embedded in the technology–society complex, which are not directly related to one or another technology but to the whole complex. The aspirations that prevail in the techno-social complex as a whole can be well identified in the context of the *dominant culture* of the complex.

3 As Endre Ady wrote, however in a slightly different context: "…and instead of life came only hours".

4 The term "extensional disability" refers to Jácint Farkas's "existential disability" concept (Farkas–Raffay–Dávid, 2022).

It is clear that different cultures and the social practices that underpin them also have different approaches to sustainability and, in some cases, different degrees of sensitivity to its problems. Sustainability can be a cultural and techno-social value in itself. The pursuit of its realization may involve confronting the technology-specific difficulties mentioned earlier, or it may involve the threats individually or all of them at once.

In many cultures, there is a wide gap between the goals set and the results achieved by the human practices that create values. On the one hand, the quality of the "material" products produced by the operation of techniques is much more stable than that of the "representational" products, i.e. values, produced in the same process. On the other hand, it is quite common for the techno-social consequences of a value, as imagined and realized, to be very different. This way, the "built-in" (cultural) failures of value production threaten the sustainability of the techno-social complex.

This situation is well illustrated by the collapse of the culture of modernity and the modern techno-social complex that unfolded during the 20th century. In the following, we will interpret the emergence of the Internet as a human response to the unsustainable modern techno-social complex, as the most important consequence of the modernist failure, with the serious potential for sustainable development.

4. The Crisis of Modernity and the Emergence of the Internet

In the last decades, the technological-social complex has changed radically: the former technologies of material manipulation have been eclipsed by the so-called technologies of representation (information, communication, cognitive, cultural). Today, these (mostly digital) technologies shape the relations of human communities and those of the human world. Internet use is now the most significant actual human practice. All representational technologies are inextricably present in the praxes of Internet use. This practice creates and sustains a new kind of complex organism, which is the Internet and which encompasses the technological-societal complex of our time, but also points beyond it.

To understand the emergence of the Internet, the evolution of its uses, and the rapid spread of its use – three or four decades after its inception, 60 percent of people now use the Internet –, we need to take into account its "ubiquity", i.e. its capacity to permeate and embrace the whole human world. At the beginning of its history, it seemed to be just an unconventional information and communication technology, but this evaluation has changed rapidly – which is not uncommon

for technologies: users' practices, ideas, and needs tend to reinterpret the original design intentions. This is what also happened in this case: as a result of the profound changes generated by users, the Internet has become *a fundamental medium for the human condition*, and today the Internet and its use are an indispensable component that carries and shapes people's lives and culture in a decisive way. It is the interests and values that are and will be asserted in this medium that shape the culture of the times – what we nowadays mostly call Internet culture, *net culture*, or cyber culture. *Web life* is a mode of human existence that is the result of the net-cultural practices of communities organized by the communications on the Internet[5] (Ropolyi 2013, 2014).

To understand the nature and characteristics of net culture and web life, it is worth taking a quick look at the conditions and processes that have led to their emergence. It is fundamental that the whole history of the Internet so far can be seen as a cultural and practical-critical response to the crisis of the modern condition of the world, of modern culture, of modernity, which has been unfolding since the mid-20th century.

The ending of the five hundred years of the modern state of world is the civilizational development that has defined the last decades. The realization of the programme of modernity, including the (unintended) inhuman consequences it entailed, has resulted in a radical devaluation of the visions, achievements, and products of modernity. Thus, a process of economic, political, cultural, and world-system-wide *crisis* has unfolded and deepened throughout the 20th century.

Crisis is the process of transformation of large (complex) systems. It is a process in which the conditions for a complex system to exist in a given way are gradually broken down, the system is dismantled and then reorganized, i.e. a new system is created. Crisis phenomena can be discussed in the context of identifying and understanding this process. The importance of the complexity and size of the system is that there are no consistent descriptions of such systems that can be captured in scientific theories, and thus we cannot use traditional dynamical concepts to interpret their changes. Interpretations and descriptions of crises are a substitute for "dynamical theories" of large and complex systems. As crises unfold, the totality-creating forces (relations of production, ideologies, worldviews, paradigms, stylistic trends, etc.) that had previously worked well lose their effectiveness, the validity of a single "order" and the belief in its validity are undermined, and the world and its perception are pluralized. The formerly accepted version of the "one–many" relationships in which the dominance of the one prevailed is no longer valid, and the pluralistic many temporarily prevails until a new unifying force emerges or is found.

5 Here I prefer to use the term "web life" to describe a new mode of human existence. I am not sure, however, that this is the best way. I can imagine that "netiety" or "netity" or some similar term would also be meaningful.

Intellectual reflections on the crisis of the system of modernity have been identified as *postmodern* stance, which served (and in fact still serves) as the ideology that has determined the interpretation of the world from the mid-20th century until decades later. Its most important declared values are plurality, virtuality, individuality, fragmentation, rejection of power, and the included modernity. The latter implies that the postmodern position does not see the modern value system as something to be abolished altogether but merely seeks to eliminate the absolute dominance of modernity's value system, thus leaving room for the process of transformation of the system.

The most important developments (as the gradual realization of a practical critique of the discredited modern world order) of this period of crisis are:

– the emergence of a new medium, the Internet, capable of accommodating and carrying the new dimensions of human relations;
– concomitantly, the emergence of a new cultural practice, net culture;
– as a consequence of these changes, the emergence of a new mode of being, which we can identify as web life.

As the Internet construction and use can be seen as a practical response to this profound crisis, it is clearly shaped by the postmodern values of the time. This means that during its operation, even independently of the intentions of its users, it is also continuously producing and disseminating postmodern values: the Internet is a postmodern value generator. Over its decades of history, it has, of course, itself been shaped – shaping and defining the content of its values is the most important arena for the ideological struggles of our time, i.e. for defining the cultural nature of web life.

It is a development of extraordinary significance that the emergence of web life does not merely allow for a transformation of the modern condition of existence. The transformation is much more fundamental: the emergence of web life is a direct consequence of the crisis of modernity, but the consequences of the crisis are much more profound. In fact, a radical change is taking place in relation to all previous forms of human existence – and its true significance can only be fully appreciated in the context of the early period of human evolution.

In fact, it could be said that the crisis of modernity can also be seen as a *crisis of all human history* so far and that with the advent of web life a new phase of human history begins. In this way, it is a foregone conclusion that the universal use of the Internet will transform the human condition.

The structure of many millennia is being modified: in addition to the natural and social mode of being, a third mode of being is emerging, one that builds on the first two: web life. Now the humans are citizens of "three worlds": natural, social, and web life relations shape their nature. The culture of the "three worlds" created by Internet use shapes and expresses the changes that are taking place (Ropolyi, 2013, 2014, 2018).

5. Sustainability versus Web Life Construction

In this paper, we introduced the concept of technology–society complex, an important feature of which is that its characteristics are determined, shaped, and used by actual human practice at any given time. In contrast to most traditional conceptions of sustainability, this allows for a "practice-centred" understanding of sustainability, in which actual (and potential) human practice is the key actor.

Additionally, we have argued that Internet use can be considered as the *most significant actual human practice* today, which creates and sustains a new kind of complex organism including but also pointing beyond the technology–society complex. This new complex is the Internet. The functioning of this new organism (sometimes called superorganism) has already created a new sphere of human existence called web life, which includes but also modifies and transcends the spheres of natural and social existence. The coexistence of these three spheres of existence is an everyday experience of Internet users. This is the primary reason for the need to address the sustainability of these "three spheres" together.

It is well known that for thousands of years people have used material technologies (agricultural or industrial) to produce their social conditions, where the material product was the main focus although the symbolic content was also present. In the last several decades, there has been a major technological shift, with the dominance of "representations" over "material" products in the most important technologies of our time. On the one hand, new technologies (cognitive, communication, cultural, and information) have emerged, and, on the other, the representational or symbolic function of traditional technologies has become more important. As a consequence, the most important features of social existence have been fundamentally transformed. The terms "post-industrial", "knowledge", "risk", "information", or "network" society all refer to a type of society where representational technologies are the dominant factor in the (re)construction or (re)production of human nature and social existence.

Already in these decades, sustainability issues were on the agenda, but, understandably, somewhat different ideas were studied in social practices dominated by different representational techniques. All these ideas were, of course, natural precursors to the ideas of the Internet age.

Social constructing practices based on representational technologies, even if they consider only one or two dominant representational technologies (e.g. information and communication techniques) as dominant, make it clear that the use of representational technologies has essentially no harmful effects on, for example, the natural environment, and that the requirement of sustainability can therefore be met much more easily. For example, representational technologies always contain (e.g. individual mental) components that are available in infinite quantities and unlimited availability, for which sustainability is naturally achieved. Internet-

based web life construction practices use all representational techniques, as well as combinations of them, equally and simultaneously, so that the sustainability benefits of representational practices can be more significant.

As web life evolves, so does the importance of the sphere of web life in the human condition as a whole. The determinacy of "human essence" is also changing: its fundamental components were previously determined by a set of social relations, but today this determinacy is increasingly obviously played by relations of gratitude. As a consequence, human relations to sustainability are naturally changing.

In these circumstances, three distinctive approaches to sustainability problems in the Internet era can be identified.

1. Traditional technical approaches. In this approach, the Internet is seen in exactly the same way as any other modern information communication technology (ICT), and the role of the Internet in sustainability is interpreted in a similar way to other modern technologies. Sustainability objectives are not determined by the nature of the Internet or the way in which it is used but are taken as given independently. A question that can be derived from this approach is: How can we use or shape the Internet and its applications to be consistent with sustainability requirements? This is a one-factor situation in which only the contexts that produce the meaning of sustainability are the "active" actors, and the use of the Internet simply has to be adapted to the requirement thus defined (Frick, 2016; Patrignani–Whitehouse, 2018; Shackelford–Douzet–Ankersen, 2022).

2. An environmentally aware technical approach. In this approach, the Internet is seen as a technology relevant to sustainability. Its significance lies in the fact that, as an active agent, it can make a significant contribution to the understanding and implementation of sustainability. For example, the Internet will be relevant to the use of representational techniques that are prevalent in its use and the benefits of these applications. A typical question might be: how and in what ways can Internet use contribute to the definition and implementation of sustainability goals? A two-actor situation emerges: Internet use itself is an active actor, alongside the actor that sets the conditions for sustainability (Duvaut–Dalloz–Menga–Koehl–Chriqui, 2020; Goundar–Purwar–Singh, 2023; Internet Society, 2015; Raut–Kautish–Polkowski–Kumar–Liu, 2022; Roblek–Meško–Bach–Thorpe–Šprajc, 2020; Souter, 2012).

3. A web life constructivist approach. In this approach, the web life construction process of the Internet use is crucial. With the emergence of web life, the whole sphere of human existence is transformed, giving the problem of sustainability a completely different context and a completely new meaning. It makes no sense to talk about sustainability and sustainable development without knowing that the

very essence of the construction of web life is to change environmental, economic, and social conditions that were previously considered unchangeable. The question is rather which relations (e.g. ownerships), in what sense, and in what way we need to change or even maintain in order to transform the whole sphere of human existence.

In this transformation, of course, a myriad of net-using agents is involved, though not in equal measure.[6] Although change would require awareness and a clear objective, these are essentially unattainable requirements for the time being. Moreover, the post-truth culture that is gaining ground today radically relativizes any position. Any public consensus seems unattainable. The situation is therefore uncertain – as are the positions on sustainability. What is certain is that there will be no return to the pre-Internet world and that the debate on all community issues (including the need for sustainable development) will have to be reopened.

So, what is definitely worth addressing is constructing a web life. Its consequences are felt throughout the human world and in fact determine both the possibilities for sustainability of the human world and the potential feasibility of those possibilities.

6. Conclusions

The unfolding human world, consisting of three (natural, social, and web) spheres of existence, typically evolves in a series of rapid and spontaneous changes. All three spheres, and the relationships between them, are constantly changing – the sustainability of each sphere is hardly a sustainable goal in such circumstances. Rather, it is the shaping of the relationships between the spheres, the understanding of their interactions, and the somewhat harmonious shaping of the values of the new human world that may be a reasonable endeavour. This can be realized, above all, in the process of constructing web life. The beginning may be to produce an infinite multiplicity of individual virtual (inexhaustibly and unlimitedly renewable) worlds, encompassing all kinds of human conditions. Maybe something is already emerging – maybe we will survive.

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6 Not everyone can run a revolution, but there are those who can (Ghonim, 2012).

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Trust and Rejection in the Reception of Information

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Abstract. One of the major new features of the digital environment is the increasing availability of information – but like so much else, this is not a completely new phenomenon. The history of culture and communication has led not only to an increase in the amount of information that can be transmitted but also to its interpersonal accessibility through newer technological tools. Techniques for recording knowledge (starting with various forms of writing) have increasingly widened the possibilities of dissemination and access. What is really new in the digital environment is the development of an information network that ensures continuous access. As a result, the accessibility of others' ideas has increased significantly, and a kind of networked collective thinking process has developed alongside it. This puts the issue of trust in a completely new light: belief in the reliability of the information transmitted strengthens collective thinking, while doubt and rejection weaken it. Social sustainability in all areas of the digital environment may require processes that can both maintain and expand the supply of information and foster trust and communication that benefits the community. This article will seek to answer this question by examining the spread of misconceptions and of trusted knowledge.

Keywords: digital information, reception of information, trusted knowledge, misconception, collective thinking

1. Information and Culture

One of the essential features of 21st-century industrial societies is that their structure and operations are linked to the efficiency of information flows and the spread and use of information. The digital environment offers a theoretical and practical opportunity for the free flow of information by enabling information sharing for all users and ensuring accessibility regardless of time and place. Although the digital divide phenomenon highlights the fact that access is by no means equal for all (for example, citizens in developing countries have less opportunities in

this area, as do those in regions that are more backward and in deeper poverty in developed countries; see Lythreatis et al., 2022), the flow of information is very broadly ensured. In addition to widespread accessibility, the speed of information dissemination is also a significant factor: on the one hand, transmission speeds have made instant access virtually possible, and, on the other, they have made it possible to transmit larger volumes of information.

Of course, the expansion of information diffusion is not a phenomenon that is entirely without precedent. Many of the earlier achievements of socio-cultural development, and in particular of communication technology, have pointed in this direction, whether by overcoming distances or by recording information. Various theories of cultural development often highlight changes in this field as milestones, such as the emergence of writing or the possibility of electronic broadcasting, linking them to radical changes in socio-cultural structures (cf. e.g. Donald, 1991). Regardless of the extent to which the emergence of a new technology can be considered revolutionary, it can be a force towards or a catalyst for significant social change; for example, the emergence of writing restructured society, inter alia, through the emergence of a literate class, as did electronic broadcasting, as one can see, through the development of mass media systems.

In the case of digitalization, the most significant socio-cultural change is that this technology presupposes the continuous and active participation of the user, changing the most basic social relations; this is why the term "digital environment" is justified (since for the user digital networks are a field of constant interactions and communication), but equally important points are highlighted by the concept of "net being" (which, according to László Ropolyi's definition, needs to be denoted in a different way from the social being (cf. Ropolyi, 2006)). It is also worth noting that, in addition to referring to the network structure of society, net being also highlights the re-formation of social relations (Castells, 1996) and the need for (often forced) connection to information. Continuous accessibility and presence can also be achieved in the digital environment because users are dependent on information and its dissemination in all aspects of life.

Another essential information feature of networks is sharing as an activity of users (and the shared nature of information). Users are not only consumers of information but also information providers: on digital networks, information is shared in a wide variety of domains. Thus, in addition to being constantly available and able to access a wide range of information, they are active participants in the flow of information – thus becoming involved in the social-cognitive processes of networks that in effect create digital culture.

This is precisely the point at which the essential problems of the digital environment arise. The networked form of information sharing is less transparent than the direct oral transmission of information or the transmission of information to specific individuals. And this opacity can easily lead to both a loss of trust in

information and the spread of unreliable information. The collective thinking that is so essential to culture will thus be affected by the flow of information that is uncontrolled – but very successfully disseminated. This is how information elements appear in the social-cognitive processes that are involved in the construction of a kind of new belief system or in the formation of a loose web of delusions (of which conspiracy theories and alternative interpretations of reality, like in post-truth theories, are striking examples). It is no coincidence that one of the major problems of contemporary society has become the issue of loss of trust and the regulation of the flow of information, the dilemma of control and freedom.

2. Information and Control

In the digital environment, it is therefore necessary to successfully achieve both the efficient flow of information, the collective thinking and action of networked communities, and the control of information – the latter can ensure the effectiveness of social-cognitive processes. The widening and accelerating spread of information is not, of course, the first time that control has become necessary (cf. Webster–Robins, 1989), but the process of control itself has become more complex. The centralized flow of information (for example, in the case of the printed press or electronic broadcasting, where information was transmitted by hierarchically structured editorial offices and news agencies) still allows for the almost automatic and effective control of information. As McLuhan (1964) points out, the medium plays a central role in cognitive processes – and the medium cannot be separated from its centralized character. These centres can exercise effective control over the content and flow of information. However, the decentralized network structure is a major obstacle to control, which is clearly an advantage for the democratization of information processes but a difficulty for the maintenance of trust. This in turn requires that issues of information reliability and control be given a high priority.

It is clear that the need to control information did not first appear in the digital environment but was already recognized in centralized media. For decades, newsrooms, news agencies, and news channels have maintained teams specializing in verification, and the process of verification has become an integral part of journalistic practice. The information received or found was subjected to both formal and substantive analysis, and further corroborating (or even refuting) information was sought. It was also already the case in the centralized media that misinformation was accompanied by deliberately distorted, manipulated, or even false material. For example, there is the old case that the famous lithograph of Abraham Lincoln, made around 1860, is in fact a fake picture, a composite: Lincoln's face was superimposed on a picture of Congressman John Calhoun, as no picture of Lincoln in a similarly elegant and heroic pose was available (Farid,

2012). A particularly interesting aspect of this case is that Calhoun, as a Southern politician, was a supporter of slavery, unlike Lincoln. But similar examples could be cited in the case of most dictatorial societies (Stalin, Hitler, Mao, etc.), where undesirable details or persons were removed from the images, or even information that later became undesirable was deleted from the archives.

As misinformation and fake news can spread more efficiently in the digital environment, the need for control is also increasing, and the infrastructure that newsrooms and news agencies have built up in the past is no longer sufficient. The objective of the fact-checking movement is to address this problem by building checking mechanisms and services that are accessible to the average user (Graves, 2016, 2018). In doing so, it also seeks to exploit the benefits that come from the networked flow of information: wide accessibility and searchability. The fact-checking movement therefore exploits both online and offline tools, the work of experts and lay people, the benefits of crowdsourcing and databases, and the usefulness of algorithms that can be run on digital information sources.

However, recent years have rather shown that this is not enough to regain or maintain social trust in information (Förster et al., 2014; Liaropoulos, 2020). The reasons for this will be examined below; but it is worth pointing out at the outset that the benefits of fact-checking procedures can only be realized if society is properly prepared. It is therefore worth introducing new tools for developing critical thinking in education, both in approach and methodology, from an early age. Critical analysis of information can only be achieved if users have the necessary skills and technical knowledge of socio-cognitive processes and of how to control information. This is therefore a challenge not only for the media but also for the various levels of education.

3. Propagation and Manipulation

A decentralized network structure also means that the mechanisms for controlling information are more precarious and the spread of information is harder to control. This is particularly striking in the case of social media, where once information is released, the multiplicity of shares can only be controlled by drastic means, at most through intervention by the service provider. One of the key tasks of the fact-checking movement is to help expose misinformation spread by sharing. The change in the way information is consumed, with users increasingly turning to social media as a dominant source rather than traditional media, such as websites of newsrooms and news agencies, makes it necessary to focus on fact checking. But it is equally important to take into account the economic considerations that are driving even traditional news providers towards social media, treating it as both a platform and a source.

As social networking sites have become the primary source of news for users, information typically spreads horizontally. News can be shared from news sites with a single click and then shared again and again by the user's friends. This process is often generated by the fact that users consider the act of sharing to be an important part of their daily activity, not only to share specific information but also to signal their own presence and activity and to reinforce their connections and relations with others.

But it is the sharing business model that makes this process really powerful. Social networking sites and other service providers place ads on the sites and share the revenue with users. As a result, all users – and all organizational participants in the information flow – will have an interest in getting as many visitors to their sites as possible and in getting their posts shared as much as possible. Blog posts will accordingly try to attract the interest of users and get them to share the content they find there. Posts are therefore often produced at a fast pace, with no time to check the information or even to formulate it in a sophisticated language and content: copy and paste have become routine.

Advances in technology have also made it possible to make the production and sharing of information an automated process. Some blog posts are automatically generated from previous content or information found on other sites, without human intervention, and then automatically shared on different social networks, generating a sufficiently high reach (Giansiracusa, 2021). The service structure, interested in increasing revenue, facilitates this process, as the production and sharing of posts can be ensured faster and cheaper through automation. What individual users notice most of all is that they encounter fresh information (or perceived as such) at a rapid pace and continuously and that a piece of news reaches them through different paths and different shares, while the number of shares increases significantly for each of them.

In addition to the horizontal spread, the vertical spread of information follows similar dynamics. As news agencies are forced to participate in this process and need to achieve high viewership and share rates in order to increase their revenues, they are adapting their business strategies to social networking site models. However, they find it difficult to compete with the information offer that a social networking site can provide, and their limited resources and small editorial staffs struggle to keep up with the digital dynamics of the networks. If their sites are not updated at the same pace as social networking sites, they will be left behind. They are therefore forced to constantly produce news and updates and to display content that keeps users' attention for as long as possible. To do this, they often highlight content themselves from simple user shares or blog posts. As a result, information follows a specific bottom-up path. It is observed that some of the news is generated at a low level (for example, in comments or personal blogs), then finds its way into official blogs maintained by organizations and journalists, and finally

ends up in the news feeds of major news agencies, entering the print and electronic channels of offline media (Birks, 2019; Graves, 2018). One striking phenomenon of this process is the way TV channels quote from news blogs or posts on social networking sites, implicitly assuming their credibility. At this point, however, serious questions arise about the reliability of the information.

An essential part of the problem is that there is no clearly identifiable source (a post linked to news feeds is often just a snippet of a share) or that, if the sequence of shares can be traced, the reliability of a user cannot be verified. In addition, vertical propagation raises the issue of greater automation. The logic of information diffusion and the business model based on sharing, as mentioned above, leads to an increasing proportion of content being generated automatically. With the development of artificial intelligence and deep learning applications, it will be possible to produce texts of linguistically appropriate quality (Giansiracusa, 2021). The most advanced natural language processing software currently available, GPT-3, can even mimic different styles. Content generated with a few clicks is instantly integrated into the information flow and reaches a large number of users through social networking sites – users who are unaware that they are reading AI-generated text.

The need for rapid updating and the pressure to produce large amounts of news means that more and more of the content is made up of artificially generated text. These texts are accompanied by images and videos, also supported by artificial intelligence applications (most famously by photoshopped pictures and deepfake videos, which are faked to look like real life, but also by simpler methods such as slow motion; see, for example, the case of Nancy Pelosi in the US – cf. Somaiya, 2019).

But it is not only artificially generated content that can be misleading, as artificial networks can also play an important role. In order to achieve higher sharing rates, networks of virtual people have been created that can reach a wide social audience almost instantly. Social networking sites are constantly struggling to filter out fake registrations, but as deception evolves, this is becoming increasingly difficult (however, there are AI-based applications for filtering already; see e.g. Ciampaglia, 2015; Pierri et al., 2020). It is important to bear in mind that the goal is not primarily information deception itself but rather to increase revenue by increasing the number of shares. An efficient and cheap way to do this is to automate the production and sharing of information.

Since they are simply trying to prove credibility by posting information that someone, somewhere has written something down, one might wonder: what is the guarantee that the news they are sharing is factual? One of the key challenges for the fact-checking movement is to address the credibility issues that arise in horizontal and vertical information dissemination; it must therefore look for facts in these cases that can establish credibility independently of the social media

sites, outside the chain of sharing. It is possible that in the eyes of users, the high number of shares may also be a test of the credibility of the information, but fact checking should not be based on vague statistical probabilities such as "a million people cannot be wrong".

4. Control and Trust

The plethora of false and misleading information has led to a significant proportion of users distrusting information on the Internet, especially on social networking sites. Our own research into this problem among 9–14-year-olds found that even schoolchildren have reservations about information on the Internet – although they admit that their schools have not yet prepared them for this (Lehmann et al., 2022). As our research focused on the prevalence of fact-checking practices among schoolchildren, we focused on platforms that students use to gather information about different issues; sharing personal information was not considered relevant from this perspective. Accordingly, the focus was mainly on the reliability of information shared on Facebook and YouTube platforms, as well as on blogs and vlogs followed, while the sharing of information on other social networking sites (Instagram, TikTok) was less mentioned by the pupils surveyed. The overall conclusion of the research was that students are aware of the presence of misleading information and doubt the reliability of information from social networking sites in many areas. So, there is a gap between the perceived reliability of information from teachers (or books) and from digital networks, social sites.

However, loss of trust can be a problem in itself. Applications (such as offered by fact-checking sites and services of news agencies) that present the facts that determine the verification process and the veracity of the news also lead, to some extent, to a further loss of trust. The more users are aware of how and to what extent news is being transformed or automated to increase the rate of sharing, the more they will be suspicious of any novel news.

The situation is further complicated by the fact that the effectiveness of fact-checking procedures can be questionable. As Birks (2019) points out, fact-checking sites often list the arguments for or against a given piece of information in vain, presenting the real facts in vain, and the majority of users prefer to stick to the position they previously believed to be true. In other words, in the mind of the average user, the facts listed by fact-checks are not a compelling force to change their mind. One possible reason for this is that in recent years the post-truth movement, which recognizes the legitimacy of alternative facts and alternative realities, has gained considerable ground in political life (Schleusener, 2018); but equally important may be the fact that human thinking is characterized by the difficulty of changing fixed opinions and holding on to – even false – ideas. In

other words, one is emotionally attached to her/his position, and this is difficult or impossible to change by cognitive means alone.

Therefore, for fact-checking procedures to be successful and socially effective, several factors need to be taken into account. On the one hand, school education must develop a willingness to accept facts and the ability to make unbiased judgements. Free debate and autonomous cognition can lead students to face up to their mistakes easily and to accept a different point of view if that proves to be true. This also requires awareness of the emotional dispositions to prefer one's own position. To the extent that this recognition is successful, practical skills in fact checking can be more easily acquired. It is therefore necessary both to help them acquire the technical knowledge of fact checking and to build up the need to check.

Technical skills can help make fact checking part of everyday information practice. The tools are essentially accessible, but a longer learning process is needed to use them successfully. It is necessary, for example, to understand the technical background to the creation of misleading information or the manipulative misuse of statistical data and the ways in which data can be interpreted.

In addition to developing cognitive skills, it is also necessary to encourage an appreciation of the benefits of fact-based thinking. Informed decision-making, longer-term planning can only be successful with the right facts (although short-term benefits can also be seen from misinformation).

But the fact-checking procedures themselves also have an important role to play. Until now, it has been assumed that the presentation of facts is sufficient to disseminate reliable information, but it is clear that facts alone are not enough to change entrenched opinions (Stalph, 2018; Bradshaw et al., 2020). A successful fact-checking exercise can also make its results attractive by putting them into a form that is easy for users to consume and benefit from. It is common for the information used to deceive to be embedded in an attractive narrative so that it is easily accepted by users (for example, offering a simple solution to a complex problem that is difficult for users to understand or offering an emotionally appealing narrative that is tailored to users' hidden attitudes and desires). Fact checking should be able to make real facts similarly appealing, making the narrative acceptable to anyone.

Here we can turn back to the question of trust. In order to maintain social cohesion and build a network for a sustainable society, trust must be regained. Although our research focused on students, there is a similar distrust of information sharing among the adult population. Just one example: a 2019 survey by *Columbia Journalism Review* and the Reuters news agency found that 70 percent of Americans distrust content shared by the US government. This figure is two percent higher than the US public's attitude towards content shared by the Russian leadership (*Columbia Journalism Review* – Reuters/Ipsos, 2019). Proper discussion and display of the results of fact-checking procedures can help to remedy some of the distrust

created by the abundance of false information. If a significant proportion of users have the discernment to check information before sharing it and only share factual content with others, trust can be regained, at least in part. However, this also requires that, contrary to post-truth theories, information is accepted by users on the basis of its autonomous verifiability rather than its mere narrative appeal. It is difficult to imagine a sustainable society without this demandingness and thus without trust in information.

5. Conclusions

The current loss of trust and the distrust of information on digital networks call for procedures that can cope with the massive and complex amount of information and consistently select reliable information based on facts. Fact checking is an effective tool for managing the information complexity of the digital environment. Fact-checking procedures – and their results – are accessible to all users and can help to evaluate information found on social networking sites and to analyse content that is shared. However, in order to successfully disseminate the results of fact-checking procedures, it is necessary to acquire knowledge about the creation and dissemination of misleading information. As we have seen, technical knowledge is not enough to be effective: there is a need for critical thinking and a need for a form of fact sharing that is acceptable to all – a way of fact checking made attractive.

It is necessary to include in education elements that relate to the development of information literacy, knowledge of fact-checking procedures, and the need to consume verified, reliable information so that future generations will be better prepared to deal with the difficulties and reliability issues of the digital information environment. However, this is unlikely to be enough: lost trust must be rebuilt, and to do so, opportunities must be found in digital networks. Fact-checking procedures can also help to slowly establish a socio-ethical norm that regulates the sharing of information through the dispositions of users rather than by law. A new kind of "social contract" (Liaropoulos, 2020) could build the trust that is currently missing in digital network communities. This should include the proper design of algorithms, which currently operate almost exclusively according to business considerations. As learning algorithms are expected to play an increasingly important role in the operation of networks as artificial intelligence develops and spreads, the principle of sharing fact-based, trustworthy information must be embedded in their design – while preserving the free flow of information that is essential for the digital environment.

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Same Place, Different Bicycles. The Etic and Emic Perspectives of Digital Life in Hungary[1]

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Abstract. The aim of this paper is to provide a critical analysis of the discursive-mediatized image of the digital environmental subject. An ambivalent element of the neo-developmental language of digital life is the "digital divide", which often takes ideological form when it constitutes the (non-)digital Other on the other side of the digital world, in the rigid binaries of centre–periphery. Of course, nothing illustrates the inequalities in access to digital and non-digital goods better than global crises such as the coronavirus epidemic, where the disparities between the living conditions (e.g. learning opportunities) of privileged and disadvantaged areas are widening, and this is one of the proofs of the existence of the digital divide. The school, which is the ideological state apparatus responsible for the reproduction of the subject as a basic productive force, became dysfunctional in different ways in different countries of the world, including Hungary, during the epidemic. In the latter, the epidemic has, according to many trusted research studies, further increased the backlog of disadvantaged and/or Roma students, and thus their segregation. Although it seems certain that the most important condition for the sustainability of digital life, and with it of the state, is the re-creation of digital environmental subjects through the education of digital literacy and critical-reflexive media use, the state seems to be abandoning these social groups in this respect; in their case, the interpellation value of digital education, or more precisely the lack of digital education, is the deterrence from learning. In the analytical part of the paper, I compare two media materials to highlight the possibility of a different narrative, coexisting with the negative trend briefly described above. These two items construct two images of digital environmental subject, and by analysing the differences between them, I would like to demonstrate that the hierarchy

1 The present study was prepared in the framework of research project no. 131868 funded by the Hungarian National Research, Development and Innovation Office, titled *The History and Current Practices of Participatory Film Culture in Hungary, with Special Regard to the Self-Representation of Vulnerable Minority Groups.*

of centre–periphery can be made relative through the (non-)digital Other's emic and critical self-repositioning, facilitated by participatory research.

Keywords: digital life, digital environmental subject, participatory film/video, digital divide, digital literacy, visual interventions

1. Introduction

Although the concept of sustainability has become the subject of global discourse in the last few decades, first in relation to the natural environment and then in social and economic terms, socio-political systems have historically always sought sustainability through the efficient use of their resources. These latter efforts differed from the discourse of resource management in the 21st century in that sustainability was conceptualized at a particular (local, imperial, national) level, given that the challenges were also particular and local, or at least particular compared to contemporary global challenges such as the climate crisis or global inequalities. Another fundamental difference to the sustainability problems of past eras is the sustainability of the digital environment, in the sense that the database-driven communication system of our time connects societies and economies on a global scale, preserves and stores cultural heritage like no other communication system before. Today natural, social, and economic sustainability and the sustainability of the media environment are linked in an unprecedented way, even though to some extent the maintenance of the mental and material infrastructures of communication was a condition of survival in all societies. The digital environment is becoming so much an integral part of societies that it can no longer be confined to the Aristotelian "second nature". The digital environment is a material endowment that takes over, complements, reflects, and expands the role of the social environment (the world of work, the world of social organization, the world of war, etc.). Thus, just as the critique of the binary opposition of nature and society raises the question of which is embedded in the other, so the social-actual versus digital-virtual binary opposition is also open to question. The inseparability of the social-actual and the digital-virtual environment means that we also cannot talk about their sustainability in isolation. We cannot talk about conventional or renewable natural resources separately from the digital systems that regulate their extraction, distribution, and use. Likewise, we cannot talk about human capital without embedding it in the discourse on digital platforms and analysing the inclusion, mediation, and exploitation of human resources in the digital medium. Following this logic, there are strong parallels between the dilemmas of the natural environment and the digital environment, especially in terms of analysing the sustainable relationship between humans and their environment. In other words, and more specifically on the basis of environmental justice,

the concept of digital environmental justice can be introduced, and the digital environmental subject can be modelled on the environmental subject.

2. The Concept and Adaptation of the Environmental Subject in the Digital Space

In 2006, Krista Harper conducted an anthropological research in a disadvantaged community in northern Hungary (Harper, 2012). She was primarily interested in proving the hypotheses that environmental injustice can always be defined as a social problem and that communities who at first sight can be visually and spatially associated with the damage caused to the environment are themselves victims of a less visible social injustice. Harper used the method of art-based participatory action research, which in this case meant the photovoice, in order to reveal the environmental problem, together with the people living there. She recruited local young ones, gave them a workshop on the method, and together they came up with the idea of taking pictures of environmental damage with their cameras. A mobile exhibition of the pictures was organized, and the results of the research were presented locally, in the capital and abroad, in the hope that participatory action research will lead to further, now larger-scale, expert interventions (better flood and inland water protection, elimination of illegal dumping, improvement of infrastructure, etc.). The emancipatory and empowering aim of the research was to help the participating young people emerge as environmental subjects in local and transnational spaces. At the beginning of her study, Harper briefly summarizes the three representational crises that have contributed to the emergence of the critical environmental subject, in the course of the 20th century.

- The first of these is the crisis of the anthropological image of the Other, brought about by the realizations that the Other is constructed in the process of anthropological research and that a much more authentic image can be obtained by the researcher if they seek to know the Other in her/his own (emic) terms, no longer in a hierarchical-exploitative but in a horizontal-associational representational discursive system.
- The second crisis of representation is the crisis of the scientific image of the natural environment, which is the result of the realization that the natural environment itself is not a "natural" thing but the object or product of discursive processes (research, policies, interventions).
- The third representational crisis is the crisis of the environmental image constructed about the environmental subject. In this context, privileged middle-class researchers have been confronted with the fact that environ-

mental problems present themselves differently to disadvantaged and marginalized groups and therefore cannot be homogenized and appropriated. The main lesson of the third representational crisis is that environmental injustice is a corollary of social injustice, i.e. disadvantaged subjects are able to become reflexive and critical environmental citizens if they are aware of the intersectional (environmental and social) nature of their exploitation.

Based on the above line of thought, we can attempt to analyse the digital environmental subject, and the representational universe from which it emerges and takes shape, along the lines of the environmental subject. First, we need to answer the question of how the Other is constructed in relation to the digital medium, along the lines of the discursive construction of the Other in anthropology (and social sciences in general). The answer to this question will hopefully lead to a rethinking of the other two aspects. In other words, mapping how the Other is constructed in or in relation to the digital environment can reveal how the digital "nature" is constructed and represented by the majority (academia, social industry, development NGOs, politicians, educationalists, etc.) and how, by becoming aware of these two realizations, the digital environmental subject can emerge and gain voice, stepping out of the objectified role of the (non-)digital Other.

Media anthropologist Faye Ginsburg's critical discourse analysis of the digital divide can help us get started. Ginsburg's article was published in 2006, and while the discourse around the digital divide has changed a lot since then, the ideological and paternalistic discourse that Ginsburg attributed to the Western techno-optimistic intelligentsia, which she called "digerati", remains.[2] It is not that the author denies the differences between the global North and South, or even within countries, in terms of access to digital tools. Rather, she is trying to point out that while these differences in access to the Internet or digital tools exist, the notions of "digital divide" or "digital age" reflect the dominance of a particular technological regime. On the one hand, the regime and its ideological neo-developmentalist language suggests that if we close the digital divide, social problems will disappear (technological determinism), and, on the other hand, it ignores other types of (mostly non-digital) tools that make possible good practices for creative knowledge exchange and preservation, for example, for indigenous or disadvantaged groups. Ginsburg argues for the existence of non-homogeneous epochs, of diverse ways of using recording tools living side by

2 "This techno-imaginary universe of digital eras and divides reinscribes onto the world the illusion that these remote 'others' exist in a time not contemporary with our own, effectively restratifying the world along lines of late modernity despite the utopian promises made by 'digerati' of the possibilities of a twenty-first-century McLuhanesque global village. Ironically, this throws us back into an earlier era of documentary practice – up through the early 1980s – in which Western documentary makers felt an obligation to represent 'the rest' without imagining that these people might be interested in representing themselves (something that the accessibility and affordability of video has facilitated over the last two decades)" (Ginsburg, 2006: 130).

side, ultimately by relativizing the hierarchical relationship between centre and periphery (Ginsburg, 2006). Going back to the above, disadvantaged and marginalized communities are automatically constructed or represented as subordinate Others in the developmental language through their relationship to and in the digital space. This type of homogeneous representation, dominated by academic researchers, politicians, or media workers, can come into "crisis", or let us say that the general picture can go from monochrome to polychrome, when we learn about the relationship of a given community to the digital environment not only from external observers but also from within the communities, from an emic perspective. Thus, not only is the concept of the digital divide dominating the discourse, but through their existing good practices and critical interventions, the digital environmental subjects themselves are reporting on their own culture. This active voice will speak differently about itself, about its community, about the digital environment, and will thus act as a digital environmental subject. The media anthropologist who critiques the ideological discourse of the technological determinist regime (Ginsburg) and the anthropologist who conducts art-based participatory action research (Harper) come to the same conclusion, arguing for and acting on the need for an aesthetic and critical (self-)repositioning of the Other. The key to the sustainability of digital life is the active participation of digital environmental subjects in creating their own image and telling an alternative narrative of the digital divide.

3. Digital Education as Function of the Ideological State Apparatus

As one of the most important areas of "digital life" is digital education, and as this is where the challenges of the coronavirus epidemic have been most visible, it is worth briefly analysing the role and function of schools. In this regard, we can take into account, among others, the French post-structuralist Marxist philosopher Luis Althusser's critique on dogmatic Marxism and his resulting concept of the subject both as a potential model for rethinking the rigid binary oppositions discussed in the introduction and as a way to understand the role of school in the sustainability of the state and the most important condition for sustainability, the reproduction of the subject. Althusser criticized the dogmatic opposition between the material base (or substructure) and the "non-material" superstructure by drawing attention to the materiality of the ideological state apparatuses, which he considered part of the superstructure (Althusser, 1970). The author's work was an integral part of the linguistic turn of the sixties and seventies since it focused on the materiality of ideology and on the materiality

of the institutions representing ideology, and it emphasized the resources of the ideological state apparatus (state, church, justice system, education) as resources that determine the base rather than being exclusively determined by the base. Ideology does not have an ideal, spiritual existence but a material existence, and an ideology always exists only within an apparatus, in its practice, in its material form. The rituals of ideology are material, i.e. they have a material effect on the individual. According to Althusser, the most important ideological apparatus of the state is the school since it is there that the basic element, the productive force of the system, the subject, is reproduced. It is in school that the individual is qualified, where they learn to submit to the order, where they are born through material and ritual (repetitive) practices. In school, ideology addresses individuals as subjects (Althusser calls this process "interpellation"), which implies a theatricality of subject formation. The author's main thesis is that there is no subject before ideology. In this way, the ideologically appropriately attuned subject is a prerequisite for the existence of any state, and the attunement, i.e. the reproduction of the subject, takes place in the school, where the subject is interpellated, mediatized, represented, and reproduced.[3]

The materiality of the new digital representational universe that emerged and rapidly unfolded in the 1990s was briefly obscured by the techno-optimistic discourse that surrounded the hypertextual structure and by the Internet and digital tools based on it at the time.[4] The hypertext discourse portrayed the digital world as an immaterial media reality, which is emancipating the user through interactivity, providing an infinite repository of data, being ideologically opposed with the material book. Then, with the spread of devices and the expansion of online space, the discourse of immateriality gave way to other ideological discourses. In the meantime, the media environment has been taken over, sometimes more slowly, sometimes more quickly, by the ideological state apparatuses to be used successfully for the interpellation and ritual reproduction of subjects. To a greater or lesser extent and to very different degrees globally, the ideological reproduction of digital subjectivity in education is now one of the most important conditions for the survival of the state. The exceptional education crisis brought on by the coronavirus epidemic only highlighted this phenomenon. For years now, education in privileged parts of the world has not been actual, even when students are physically present, but actual *and* virtual, hybrid so to speak, a kind of mirror showing the everyday intersection of the social-actual and the digital-virtual.

3 There is an interpenetration between repressive state apparatuses (government, courts, police and armed forces) and ideological state apparatuses, in other words, violence and indoctrination working in tandem on the subject. Examples of interlocking are the teacher's physical and psychological disciplinary techniques in the old days and today the presence of school guards in Hungarian schools, visits to schools by law enforcement agencies, or the offer of law enforcement careers to disadvantaged/Roma youth.

4 For a critique, see, among others: Hayles, 2001; Müllner, 2007.

4. The Education in Hungary during the Coronavirus Epidemic, with Special Reference to the Situation of Disadvantaged and/or Roma Students

Below are an article and a study on the education of disadvantaged and/or Roma/Gypsy pupils during the epidemic. Róbert Báthory, a journalist for *Szabad Európa*, writes:

> According to a survey made in May [2020], digital education has hit families of students with multiple disadvantages the hardest. Joint research by Rosa Parks, the Partners Hungary Foundation, and the Motivation Association has found that one third of children with multiple disadvantages have disappeared from digital education in Hungary. Ágnes Kende, a sociologist at the Rosa Parks Foundation, says the government cannot expect parents with low levels of education or who have lost their jobs to teach their children maths or literature and linguistics at home while they struggle to make ends meet. (Báthory 2020)

I quote at length from the authors of the study presenting the research:

> Based on the results of our research, we can predict with a fair degree of certainty that the forced transition to digital education has further increased educational inequalities in Hungary. This is also an issue in other countries, but in Hungary the almost complete lack of government support for teachers in schools with disadvantaged children, and the abandonment of disadvantaged children and their families, means that the increase in educational inequalities is likely to be particularly marked. In our view, there will be a significant increase in the number of children repeating and dropping out in the future. This may be particularly true for disadvantaged students of secondary school age: they have been studying at a distance for almost a year now, with a significant proportion of them having little access to the conditions and infrastructure needed to study at home. Young people from disadvantaged and Roma backgrounds typically go to vocational schools, where they are expected to take part in practical training. It is easy to see that in distance education this is even more difficult than in other types of secondary schools (grammar school, technical college); in some areas, it seems impossible. The social divide in education is certainly widening also for primary school pupils, as our research shows that the higher the proportion of disadvantaged pupils, the more pupils were unable to engage in digital education and lost contact with teachers

> (i.e. dropped out of education in the first month). Among those who have not been disconnected, there are also a very significant proportion for whom paper-based learning materials and assignments meant "distance learning". In a family in which the parents themselves are uneducated, live in difficult existential circumstances, and where housing poverty is prevalent, it is obvious that such a formally maintained school has little to offer in terms of content and knowledge acquisition. According to the vast majority of teachers, education was impossible without significant help from parents, and one of the biggest difficulties was that pupils could not understand the tasks and material on their own. Based on this data, it is clear that disadvantaged students' backlog has increased during the digital education period, even when they were able to engage in education.[5] (Kende–Messing–Fejes, 2021: 93; see also Fejes–Szűcs, 2021; Horn–Bartal, 2022)

This leads us to conclude that the class and ethnic disadvantages in digital education are a heightened version of the disadvantages observed in traditional education. The digital education gap (or, more precisely, the gap between the lack of digital education and the presence of digital education) multiplies the effects of segregation. A direct consequence of this is that there is a double exploitation in the crisis of (digital) education, with the reproduction of labour being shifted to the disadvantaged, possibly unemployed worker and their family. We can assume that all this does not mean that the state ceases to reproduce the subjects it needs for its own maintenance. Although the material and repetitive rituals practised at school are not part of students' daily lives in the absence of education, they are also interpellated outside school. On the one hand, the school is replaced from time to time by other ideological state apparatuses, or substitute institutions, like the church as a spiritual or the municipality as a material helper. On the other hand, and beyond these, the most important performative is a silent interpellation: you do not need to learn. Prior to this denial has been another one, as the Hungarian state has not yet addressed its Roma citizens through the curricula in order to strengthen

5 Regarding the overlap between multiple disadvantage and Roma origin, the authors draw attention to the following: "In line with the Hungarian literature (e.g. Havas, 2008; Havas–Liskó, 2005; Papp Z., 2011; Szűcs–Kelemen, 2013; Zolnay, 2007), we distinguished four groups of schools (or classes) in terms of their composition: schools with an estimated proportion of multiple disadvantage or Roma children lower than the national average (0–20%), schools with a mixed composition (20–40%), schools on a segregation trajectory (40–60%), and socially and/or ethnically segregated schools (60–100%). As the two categories (multiple disadvantage, Roma) showed differences that were practically within the statistical error range, we do not report the results separately for the two groups. However, this does not mean that we are conflating the concepts of Roma and HHH children; we are aware that these are fundamentally different groups and require different public policy approaches, yet an important finding of our research is that in the perception of teachers, the HHH and Roma categories are strongly confused (Messing, 2014; Messing–Bereményi, 2017)" (Kende–Messing–Fejes, 2021: 82) [quotation translated by the author].

their cultural identity, or rather it has addressed them through denial: Roma culture is not part of school.[6] A national-ethnic community whose identity has been denied in school curricula (and whose Hungarian identity has simultaneously and permanently been denied by the political leadership until today) is being reproduced again under the epidemic as an uneducated Gypsy subject, whose fate is further segregation, whose chance is to live in a subordinated caste. This is apartheid, not yet raised to the level of law, but already functioning in practice.[7]

5. Two Narratives about Tomor – Two Digital Environmental Subjectivities

In the following, I will present two media materials, which have in common that they both were produced in a small village called Tomor in northeast Hungary, completely independently of each other. One is Róbert Báthory's *Szabad Európa* video (also summarized in a written article), and the other is a participatory media project or, more precisely, a video made in the framework of that participatory media project. The participatory video/media project was a weeklong film workshop organized in August 2021 by the researchers of the Minor Media/Culture Research Centre (ELTE Department of Media and Communication). Róbert Báthory's video explores the impact of the epidemic on education through the testimonies of three affected families, quoting a statement from the Secretary of State for Education and briefly presenting the aforementioned scientific research.[8] The lead summarizes the content of the video for the reader: "Three mothers, three very different life situations, but all of them have struggled with digital education. Two mothers with eight grades who had to relearn the multiplication tables with their children. But even for the mother in Buda[pest], quarantine school was stressful. The Secretary of State predicts only 2-3 weeks of digital education" (Báthory 2020).

The video does not essentialize the difficulties of digital education and the disadvantages of the lack of digital education as a Roma problem, but the differences between the possibilities of the (non-Roma) mother in Budapest and the Roma mothers in Tomor are clearly visible. Although there are some overlaps between the actors appearing in the two contents, there are so many differences between the video reportage and the video produced in the media project that at first glance

6 There have been several studies on this topic in the last twenty years: Terestyéni, 2005; Monitor Critical Workshop, 2014; Binder–Pálos, 2016.

7 The term *apartheid* was conceived and used cynically in South Africa as the equivalent of "good neighbourhood".

8 "Róbert Báthory is a senior investigative journalist for *Szabad Európa* [Free Europe] in Hungary. He has been working in the media for 17 years, 10 of which as a reporter, editor, and editor-in-chief for the biggest television stations: RTL Klub, Tv2, Hír TV, MTV. Before that, he worked for Kossuth [National Public] Radio and Rádió C [the first Roma radio in Hungary between 2001 and 2011]" (Szabad Európa).

a comparison does not seem justifiable. There are differences between genres (reportage – self-introductory video), subjects (the state of digital education – the village's landmarks), platforms and access (free news portal – YouTube channel with limited access), the production backgrounds (media agency – a film workshop organized by the staff of a Budapest university research centre for local children, supported by the Hungarian state and with the participation of independent filmmakers), presumed audiences, educational environments (official school – off-school alternative education). Certainly, other differences can be detected, but perhaps the most important is the difference between the narratives and their framing, and on this level it is worth comparing the two items of content, primarily with the aim of looking at them as two examples of the construction of digital environmental subjects. In the video, the journalist reveals the negative experiences through the voices of the people involved, providing the reader with an (at least partly) emic perspective. The bounded nature of the reportage genre means that the narratives of those involved are introduced with a rhetorical device in order to assert an external point of view. This visual-rhetorical description of the space evokes the reader's hidden knowledge of the disadvantaged Roma settlement and sets the stage for the stories of the mothers of Tomor about digital education:

> Dilapidated houses in the one-street village. Children with torn shoes on adult bicycles. The silence of Tomor in Borsod County is disturbed only by the roar of a combine harvester rolling through the village. Only 230 people live here, and those who can are fleeing. Miskolc [the nearest big city] is very close on the map, only 35 kilometres away: 40 minutes by car, an hour and a half by bus. For the local Roma, the distance is almost insurmountable. (Báthory 2020)

In the report, one mother expresses everyday deprivation in terms of the mutually exclusive opposites of food and digital education, which the journalist then emphasizes in the title of the report: "they will either eat or use the Internet". The ranking of basic needs highlights the secondary nature of digital education, and ultimately that if the intellectual workload on families is coupled with the lack (unaffordability) of communication infrastructure, then digital education goals at home are unattainable and digital life is unsustainable. Seeing the two locations presented in the report, and hearing/reading the narratives, the viewer/reader of the report is strongly drawn to the image of the digital divide, which is difficult to argue with. The narratives of the mothers in Tomor help us to understand that, through no fault of their own, their children are disappearing from the very ideological state apparatus that is supposed to address them and whose function is to reproduce them as a workforce. The workforce is reproduced for anything

other than the workfare system,[9] by erasing students from the digital space, denying them the chance to be mobile on the labour market, to improve their skills through their lifetime, and to become critically reflexive digital environmental subjects.

Coming back to the differences between the report and the media project, we have to mention a difference that allows us to create a different narrative about Tomor. It should be stressed that this other narrative does not negate the narrative of the digital divide articulated in the report but relativizes it by its very existence. So, the video was shot in Tomor, as part of the Dunaszekcső-Tomor participatory media workshop. The concept of the workshop, which took the form of a summer camp, was to bring together young people aged 10–18 living in two locations, first online for three days and then in the physical space for another three days. During the first three days, both in Tomor and Dunaszekcső, their film teachers taught them how to use a camera and a microphone and how to produce various media genres (e.g. interviewing). After the exercises, they made, among others, "postcard"-type films, in which they introduced their own community and talked to the distant group about their relationship with it. These "postcards" were then sent as MP4 files to the other community, who in turn also sent them a postcard film about their location. Practising filmmaking roles or participating in the editing of films made young people aware of the process of digital filmmaking, the actual and virtual components of the process, the specificities of the surrounding actual and virtual environment, not to mention the positive role played by the fact that they were already involved in a creative and dialogical process online before the physical encounter.[10]

The postcard film *Tomor1* uses a guided tour scheme, which proves to be a very creative solution by the young filmmakers.[11] The one-handed camerawork films the guide from a bicycle, who also rides his bicycle along the main street of the village, slowing down at certain places of interest, and the young people standing there, turning to the guide, in fact to the camera, give a few sentences about the place. The first stop is the playground, where Laci tells us that young people used to come here to socialize, but there are no other entertainment facilities in the village; then comes "Andi's shop", which Adrian tells us used to belong to his godmother Andi but has recently closed down; from here we come to the statue of the village's namesake, Pál Tomori, where Letti and Kamilla are standing, speaking about Pál Tomori; at the nursery, the youngest camper, Geri, tells us that he "didn't like studying there very much, but it was fun"; and, finally, we arrive at the Reformed church, where Niki

9 On the workfare system in Hungary, see Keller et al., 2016.

10 On the participatory film method called catalyst method, films and their analysis, see: Haragonics, 2022; Müllner, 2022. The two articles cited here, together with other articles, were published in the special issue of the Hungarian social science journal *Replika* on participatory film (no. 124). The same collection of essays will be published in English, in the journal *Film and Media Studies – Acta Universitatis Sapientiae*.

11 The cast (in order of appearance): Levente Siroki, László Mogyoró, Adrián Siroki, Letícia Mogyoró, Kamilla Horváth, Gergő Horváth, Nikoletta Jóni. Camera: Tamás Jocha.

tells us that they usually organize a summer camp there for children. The four-minute forty-seven-second film features not only landmarks but also other attractions such as a wooden tower, the local government building, the car of the mobile post office, a parked intercity bus, the bridge over the brook Vadász. Yet, the most important conceptual element is that the young people are personally connected to the places they are showing. An emic narrative without external framing is created before the viewer's eyes, with the narrators narrating each location to the camera, which is representing the external observer. Although deprivation is expressed (the playground as the only place for young people, the closure of Andi's shop), it does not dominate, nor does the presentation of the village focus on illustrating deprivation, compared to the description of the location in the report mentioned above. Indeed, in this film, with one or two exceptions, there are no "dilapidated houses", not to mention "children with torn shoes on adult bicycles" – which is not to say that perception focusing on deprivation is false, it simply means that from the emic perspective of the young people filming, this is not a relevant visual information. With digital literacy as a competency, they wanted to show their critical environmental subjectivity through the gaps, while at the same time highlighting local landmarks that were important to them. All this took place in a hybrid space, in actual locations and in the virtual media space, actively communicating with another group at a distance (then nearby). The subject of the film is not the actual state of digital education, but digital media is its medium and channel, the learning and confident mastery of which is a process for young people in Tomor, who are not a homogeneous group in terms of age and film expertise. The Dunaszekcső-Tomor participatory film camp is the culmination of a process that has been going on for two decades.[12] Watching *Tomor1*, it becomes clear to the viewer that the locals are not playing the victim role familiar from the documentary tradition or mass media representation, that they are not on the losing side of the digital divide, and that digital education is not experienced by them as a fiasco. Again, it is in these victimizing roles that the residents of Tomor *can be authentically portrayed* regarding the actual state of digital education in Hungary, but this is not the preferred perspective of the young people themselves. They prefer to portray themselves as active and competent in the actual and virtual spaces, and, indeed, they prove their competency.

6. Conclusions

In the title of this paper, I aimed to endow with metaphorical power the bicycles that appeared in the two media materials. In the *Szabad Európa* report, the rhetorical image of children with torn shoes riding adult bicycles powerfully

12 On the film and media camps led by László Siroki Jr. in Tomor, see Gunther (2017) and on local community organizations in Tomor, see Sélley (2006).

portrays the social conditions in disadvantaged, predominantly Roma settlements. The rhetorical power of the image lies in the fact that it presents deprivation in a discursive and conventional cutaway shot,[13] and also in the fact that it suggests that children do not progress along their life paths by age-appropriate means, i.e. that they engage in adult activities (starting a family early, engaging in early start of work, etc.) instead of learning. In the other material, the bicycle plays a constructive and integral role in the filmmaking process by ensuring the smooth movement of the camera and maintaining the viewer's attention. This is as creative and genuinely cinematic an idea as the tour guide, whose functional role is to direct the viewer's gaze through the visual process. The content should be analysed together with the media project in which it was produced, taking into account its educational purpose, actual-virtual spaces, media genres, allied actors, etc.

The two images and the two media materials present two different environmental subjects, albeit not in mutually exclusive ways. *Szabad Európa* reports on the difficulties of digital education through the accounts of a mother in the capital and two mothers in Tomor, making the reader/viewer aware that it is not a "gypsy problem"; yet it also shows the difference between the opportunities available to the inhabitants of the two settlements. The rhetorical introduction, which presents an etic perspective, is followed by emic perspectives, and the testimonies confirm that the epidemic has also had a devastating effect on digital education, mainly due to the dysfunctionality of the government. If a reflexive and critical digital environmental subject is a prerequisite for the sustainability of digital life, the crisis has demonstrated this in a negative way. Disadvantaged and/or Roma communities have found themselves in an even more difficult situation, their prospects for learning and thus employment have deteriorated, and the degree of socio-ethnic segregation in Hungary is predictably increasing. The participatory media project does not refute this prediction but presents an alternative narrative of the same physical space, with a different "cyclist" at its centre, who is an active and conscious participant in the digital space. It is no substitute for state-level intervention, nor does it compensate for the lack of it, but it can contribute to the sustainability of digital life if researchers and civil forces work in alliance in order to discursively-medially construct the digital environmental subject in virtual space. We need to find the digital-based formats, methodologies, digital ecocritical collaborations and alliances that can respond to the three digital environmental representational crises. This requires a deconstruction of the majority conception of the Other projected on the "other side" of the digital divide, a reflection on the discursive construction and materiality of the digital environment, and, as a result, the emergence of an active digital environmental subject.

13 For a discussion of the shoe as a conventional, cutaway shot, see Hammer (2006).

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Pécs Chatter. A Digital Anthropological Study on the Impact of a Facebook Group on Local Politics

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Abstract. Research on the political role of digital media, including social media, is often based on the assumption that new communication platforms can contribute to new forms of political participation such as taking part in deliberative political debates more actively and exercising the right to vote more often. Most of the studies focus on national processes: nationwide political campaigns and general elections. In this paper, we offer a different angle on these issues, focusing on a specific locality, more specifically the activities of a politically themed local Facebook group in a middle-sized town in Hungary. We also apply a digital anthropology approach that enables us to use a hybrid methodology combining online and offline tools in our research design. Results are presented in this paper in a research report format. We are far from a final conclusion about the interplay of social media use and political activity, but hopefully the experiences we share will shed some light on the functioning of these types of online communities.

Keywords: local politics, social media, case study, online communities

1. Introduction

The 2019, municipal elections in Hungary brought about an unexpected success for the opposition candidates in several ways. Despite the governing party coalition (Fidesz–KDNP) controlling three-fourths of the seats in the legislation at the time and having a disproportionate amount of financial resources at its disposal, the united opposition has managed to gain important positions (the mayor and most of the district mayor positions in the capital, and the majority in local governments in some larger cities as well as mayoral seats in 10 out of the 23 county centres).

Various new phenomena might have played a role in this outcome: the coordinated nomination of candidates by the opposition parties, the emergence of independent candidates and electoral organizations, the active use of social media in the opposition campaign on Social Network Sites (SNS), and the newly developed preselection process to select the seemingly successful candidates for mayors and municipal representatives (Kovarek–Littvay, 2022).

We presumed that the more extensive and effective use of social media contributed to the opposition's success in local politics in a significant way, and we have decided to do a closer study to extract new insights into local political processes. The hypothesis that taking part in informal political debates on the Internet has a positive effect on political and electoral participation is not at all new in itself (for a recent discussion, see: Vaccari–Valeriani, 2018). The novelty of our approach comes from the fact that the vast majority of political science research deals with political processes on a national scale, while the focus of our research is outside the capital areas and specific localities.

The results presented in this paper are part of a long-term research project that investigates the impact of SNS on local political processes and voter behaviour by studying examples from Hungarian municipalities.[1] These three branches of the research represent the different methodological approaches we apply:

1. analysis of online interactions of mayors and members of local government on Facebook (quantitative research based on representative samples),
2. a detailed assessment of patterns of voter behaviour using a representative study (personal survey with a large sample of participants),
3. examining the operation of online platforms using online and offline methods (digital anthropology).

The observations we present in this paper belong to the third branch. The specific methods we used were participant observation in local Facebook[2] groups, personal and online interviews with participants (members of the local government, journalists, civilians, activists), the analysis of the content of the posts and the community interactions by using the *CrowdTangle*[3] tool.

1 NKFI Research titled *Networked Locality: Examining the Role of Social Media in Local Politics*, led by Márton Bene (ELKH PTKI) (2020–2024).

2 Facebook is by far the leading social networking site used by Hungarians; according to Meta's advertising resources, about 60 percent of the population are users of this platform. Other social media platforms either attract a smaller audience (e.g. only about 5 percent of Hungarians have a Twitter account) or do not have the same political relevance (27-28 percent of the Instagram and TikTok users tend not to follow political profiles). YouTube has a reach similar to Facebook, and it is an important site for sharing political content, but the related politically themed discussions are among mostly anonymous pseudo-profiles. For these reasons, we have limited the scope of research to Facebook. (Source: https://datareportal.com/reports/digital-2022-hungary [Accessed on: 10 September 2022]).

3 CrowdTangle is a tool offered by Meta to follow, analyse, and create reports about profiles and groups and is currently applicable on the Facebook, Instagram, and Reddit platforms.

We argue that the main value of digital anthropology in the study of local politics comes from the fact that trends and tendencies arising from quantitative results could be confirmed, refined, or even overwritten by using soft methods. With this approach, we can validate whether the participant accounts and data coming from the examination of interactions converge, and we can offer alternative explanations. We could also form specific questions about the nature of local politics as seen on the online platforms (Who are the main actors? What kind of topics receive more public attention? Is there any room for deliberative debates?).

Finally, the use of digital anthropology as a theoretical and methodological framework allows us to focus on specific localities. In our case, the actual place of the first fieldwork was Pécs, a middle-sized town in Southern Hungary, and we present our findings in the form of a research report.

2. The Field

Pécs is the fifth largest city in Hungary, the centre of the Southern Hungarian region, with a population of about 140,000, slowly but steadily declining since the 1990s. It is also a characteristic university town with more than 20,000 students enrolled at the University of Pécs (almost a quarter of them are international students), and the university is the largest employer in the region. After the regime change in 1989, Pécs came to be considered a stronghold of the political left, which won most of the national and municipal elections before 2010. The Fidesz–KNDP coalition first succeeded in the 2009 interim mayor election and took all three seats in the national parliament a year later, and then the mayor was also re-elected along with a significant majority in the local government. After 2010, the Fidesz–KDNP coalition managed to win a two-thirds majority in the legislation in all four consecutive national elections and secured the mayoral seats in the local elections before 2019 in all major cities in the country except for Szeged.

In Pécs, however, an independent candidate, Tamás Mellár backed by four oppositional parties took one of the seats in the 2018 election. The result proved that there is room for the cooperation of the opposition parties in the local elections. A new association was formed to support coordinated candidate selection, named Mindenki Pécsért [Everyone for Pécs], with the support of all the major opposition parties except for LMP – Hungary's Green Party, along with independent activists who were also invited to join this organization. In hindsight, this alliance proved to be a very successful venture during the 2019 municipal elections. Attila Péterffy, the independent candidate backed by the association was elected mayor by a significant margin (53%), and Mindenki Pécsért had a landslide victory, winning 18 out of the 26 seats in the local government. Although the winning coalition had been disbanded due to inner conflicts between the parties, the delegates, and the

independent mayor, the multi-party coalition, renamed as Pécs jövője [The Future of Pécs] still controls the local government firmly with 15 seats.

Pécs is a relatively large city with a considerable cultural influence, so it comes as no surprise that there are countless groups on Facebook in connection with the city. There are larger and smaller non-politically-oriented groups such as local marketplaces, work opportunity hotlines, and programme announcing cultural agencies. Compared to other Hungarian cities of similar size, media outlets operating in Pécs are plenty, and many of them have a significant number of followers on Facebook. Non-governmental organizations also operate their own open and closed communities on the site, not to mention countless niche communities for sharing memories, information about sporting events and recreational activities, old and new photographs of the city and its surroundings, and other communities of interest.

To do a more in-depth study, we narrowed down the focus of our research to a single community, the so-called Pécsi Kibeszélő [Pécs Chatter] group, which is a small (at the time of the study, it had around 3,000 members) but active community for those who are willing to talk about local issues publicly, using their name or at least their main Facebook account. We have chosen this group because some of the following types were present in all the groups we were interested in: members of the local government, party and civilian activists, concerned citizens, journalists, and opinion leaders. Right from the start, there were several daily posts, most of which earned a very modest response, but the more successful ones could get about 3-400 reactions and reshares.

The group had been founded by local activists of the recently founded Momentum Movement Party, originally for mobilizing purposes with regard to the 2019 autumn vote. After the election, they reshaped the group as a discussion forum anyone could join regardless of political views or party affiliations. It was envisaged as a safe space where everyone could express their opinion as long as it did not include blasphemy, name-calling, or hate speech. Moderation was supposed to be scarce, and moderators discussed the cases of blocking members (almost exclusively anonymous trolls) among themselves. As the group started to grow, some tensions started to show through, and there were only occasional disputable actions carried out by the moderators, such as the incident we will cover later.

We also narrowed down the original time period of our investigation (posts between autumn 2019 and summer 2022) to do a more in-depth analysis during the late spring and early summer of 2021 to avoid including special events such as pre-election periods and campaign seasons. Parallel to that, we conducted 10 interviews between June 2021 and July 2022, including two of the founders, three members of the local government, three journalists working for local media outlets, and two ordinary residents. With two exceptions, they were all active posters and commentators of the studied period.

3. Observation and Interviews from the Field

Initially, we planned to include the mayor as a participant in our investigation. However, after taking a closer look at the mayor's activity on Facebook, we have found that his social media presence is channelled through the city hall communication staff, and his genuine interaction is limited to posting some interactive videos during the pandemic. On the Pécs Chatter group, one can only find cross-posted content from the mayor's official profile, usually shared by party activists. The absence of the city leader from these discussions seems to be a deliberate choice on his behalf, preferring professionally prepared messages to more spontaneous forms of communication with the voters, even on the social media platform.

Some representatives of the local government are, on the other hand, quite active on the platform, sharing news about their constituencies, writing about development projects for the future, or showing the results of smaller improvements in living conditions. Some members of the former larger coalition, now working on different fractions of the local government, are actively sharing their content on Pécs Chatter and on Facebook in general, but they also rarely engage in conversations initiated by other posters. The representatives of the governing parties (locally in opposition) were initially occasional commentators of the Pécs Chatter group, but they were keeping their distance at the time of our investigations. The fact that apart from the early start-up phase (June 2019), members of parliament representing the city got involved in the discussions very rarely also reduces the significance of the group in the local public sphere.

Those members of the local government who are present on Pécs Chatter use the platform for different reasons, as the interviews suggest. All of them look on this group as an efficient way for directly reaching out and informing their voters, but there was only one representative that looked at it as an actual platform for getting real voter feedback which then can affect certain decisions. One of them stated that the presence on social media platforms cannot replace real-life interaction with voters, and they can find out more about public opinion by having conversations in person or by phone. Content shared on social media is also viewed more as a campaign tool rather than a working solution for keeping in touch with those living in their constituencies.

As we would present later by numbers, the majority of posts are reshared content provided by local media outlets. In rare cases, journalists shared their content directly from their own account, and in most cases they are reposted by some members of the group. One of the interviewed participants acknowledged that social media shares have a significant impact on page downloads at their actual sites, while others stated that they pay little attention to that. According to them, being newsworthy should be enough, and they refrain from expressing

their opinion on Facebook (that does not mean that they do not read readers' comments regularly). It is very difficult to say whether they use different techniques to promote their articles, but direct advertising via the platform is not present according to *CrowdTangle* data. This practice is very unlike nationwide media outlets, where a significant amount of money is spent on advertised posts daily by both sides of the political aisle.

Journalists were generally thought to be central characters in the local public sphere in the past, operating as opinion leaders, gatekeepers, and middlemen between political actors and local citizens. However, these stereotypical conceptions about the role of the journalist were largely missing in our interviews. Values such as providing relevant news and information, avoiding hearsay, and preferring factuality over subjective opinion had been stressed by all of the participants regardless of their different political affiliations. Growing a readership by being trustworthy sounds like a generally good idea, but one can have some obvious doubts about the sincerity of these statements. Fake news and disinformation might not be permanent features in the everyday practice of producing local news, but we have observed conflicting reports of important local events presented in different outlets of the local media.

The majority of active posters and commentators in the Pécs Chatter group are locals (without holding a formal position in organizations) that fall into three categories: political activists, members of non-profit organizations, and concerned citizens. The first group is more likely to share national news content that has been already edited for propaganda purposes: they try to push forward some party agenda that seems to be timely. It is important to note that these posts are attracting the least interactions (shares, responses, comments), but they became more and more frequent during the time of our investigations. Even if we do not identify them as spammers, they are responsible for creating significant noise within the group messages.

Local non-profit organizations usually deal with some social issues such as sustainability, housing poverty, and environmental issues, and their presence on the platform is generally motivated by the lack of resources. For them, Facebook as a platform provides an opportunity to raise awareness, mobilization, and agenda setting. Although they can meet significant backlash when posting about sensitive issues, their activities often lead to important and "real" debates within the group. Concerned citizens' posts are mostly general observations about city life, problems of cityscape, living conditions, or the general way of treating each other – everyday stories. Despite the often naive and commonplace nature of the content posted, they are triggering many reactions.

The largest group of active users mainly repost local news in the media with a short commentary. They also participate in the discussions that take place below the posts, regardless of whether they are their own posts or those of others. However, as

we will try to show it later, these threads rarely constitute a real engagement with other group members, most often being about venting thoughts and feelings.

Last but not least, some trolls try to stir the waters from time to time. They hide their identity, and their posts and comments are politically motivated, often sarcastic, confrontational, and provocative. The posts from anonym, fake profiles are usually swiftly deleted by the moderators along with comments originating from such accounts. Regarding our case, there is a troll profile that fits most of the description, yet it had a positive impact on the community. As a matter of fact, the most frequent poster and commentator during the time of our study was an apparent troll account. Using a manipulated picture of George Soros and Mini-Me as an avatar, a Jewish-sounding name from a 1996 movie and the refusal to reveal his/her real identity were definite signs of that, and this Internet persona had been already active on other local forums before the 2019 local elections. Despite joining the Pécs Chatter group after a few months after its creation, he soon became a kind of undesignated group host very early on. After a period of being an unconditional supporter of the new leadership at the city council, he maintained an ever-critical position about former and active leaders of the local government and voiced his general scepticism about the objectivity of local media outlets. His active and dominant presence in the Pécs Chatter group had a significant effect on maintaining attention, broadening the discourse, and eliciting opinions. Regardless of being an obvious troll, he was well accepted by other members of the group. Eventually, the profile was banned from the group under unclear circumstances, a couple of months after the recall of a deputy mayor. This was the only incident when at least one moderator did not agree with the decision about "kicking someone out". It is important to note that after his leave the volume of group interaction dropped significantly.

4. Results from Content Analysis

The viral nature of political messages is a hot research topic within the context of the relationship between social media and politics. This concept refers to a new phase in the mediatization of politics, where political content is moving out of the control of traditional media. These processes do not only entail that there will be a new logic of distribution, but the expressiveness of those messages will be also a crucial factor (Bene, 2019: 105–115). In the first part of our analysis, we examined the most popular posts to find out about the most popular content.

Using *CrowdTtangle*, Facebook's analytical tool, we collected the top five "overperforming" posts of the Pécs Chatter group every month from its launch (posts between September 2019 and June 2022). *Figure 1* shows the relationship between the topics and sources of these posts.

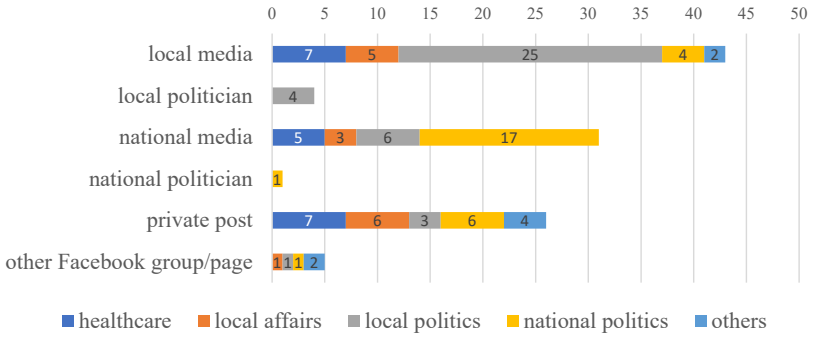

Figure 1. *Topics and sources of the most popular posts in the Pécs Chatter group (n = 110)*

Thematically, local (39 posts) and national (29 posts) political topics were the most frequent among the viral posts, but local affairs related to the daily lives of city dwellers (15 posts) also proved to be popular. The remaining topic is also strongly associated with health-related issues (19 posts), which is understandable given the persistence of the coronavirus epidemic throughout the whole period of our study. As you can see, the 110 most popular posts were mostly local (43) or national media news (31), but the group members' original posts were tailing right behind (26).

Looking more closely at the most popular viral content from the group, based on *CrowdTangle* data, we can see that a significant proportion of it was about the epidemic and quarantine. Group members repeatedly wrote morally charged Facebook posts about quarantine rules or mask-wearing routines. The group's most popular and shared post (969 times) was an article published by a local news portal in which a trade union leader in Pécs reported about the forced leaves of absence due to the epidemic in April 2020. Another post that was also widely shared (more than 400 times) in the same month was one in which a local political activist called for volunteers to help the elderly with their shopping during the quarantine. Popular posts on local affairs dealt with issues such as urban transport, parking, or the resurfacing of a piece of furniture from the town's famous confectionery with a historic past after decades of being missing. The most popular political posts had been also mainly of local relevance: i.e. an article commemorating the city's former left-wing mayor or a post about the planned brand new football stadium in Pécs.

The above examples prove that the viral content in the group is mainly about local political matters or issues that the residents of the city can experience in their daily lives, and at times national issues with strong local relevance. The main sources of the posts are news media outlets and the observations of the group members

themselves. They were rarely created by politicians or political organizations, and they do not include political memes or other types of entertainment content. In addition to virality as a concept, it is worth noting that the news value of local political discussion forums is related exclusively to traditional news media. Similarly, as Zizi Papacharissi has found in her research on Twitter's political content, the transformation of events into news stories mixes traditional news values with platform-specific values (Papacharissi, 2015: 42–43).

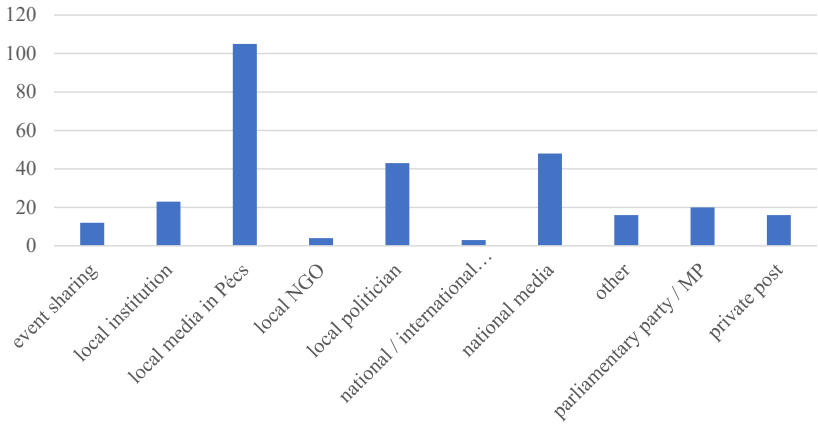

Figure 2. *The sources of posts during May/June 2021 in the Pécs Chatter group (n = 290)*

We have examined the communication in the Pécs Chatter group in more detail through a content analysis of posts and comments in May and June 2021. During the two months, group members posted 324 times, which were commented on 1,138 times. As shown in *Figure 2*, the sources of the posts are relatively similar to the viral content mentioned earlier. Of the 324 posts over the two months, 290 were re-posts of some other external content: most were re-posts of local (105) or national media (48) news.

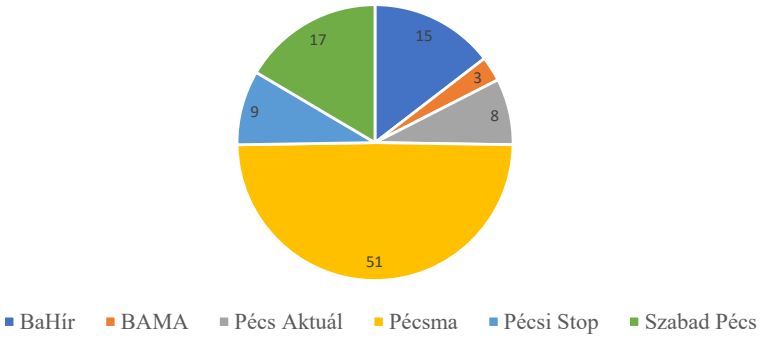

Figure 3. *Local news sites as sources – May/June 2021 (n = 103)*

In the case of local media (*Figure 3*), news from the news portal of the municipality of Pécs (*Pécsma*) were the most often shared, followed by news from independent or left-wing opposition media outlets (e.g. *Pécs Stop*, *SzabadPécs*), while news from portals linked to the government or the Fidesz Party (*Bama*, *PécsAktuál*) were shared only occasionally.

During the two months, most of the posts dealt with domestic and local politics, with a similar share of commentary on these news items (*Figure 4*). A relatively large number of posts covered cultural topics, as one of the group members regularly shared events and programmes of the city's cultural institutions – the figure shows that these were hardly commented on. We can also see that 10 percent of the posts were about everyday urban issues, which we have already mentioned in the context of viral content.

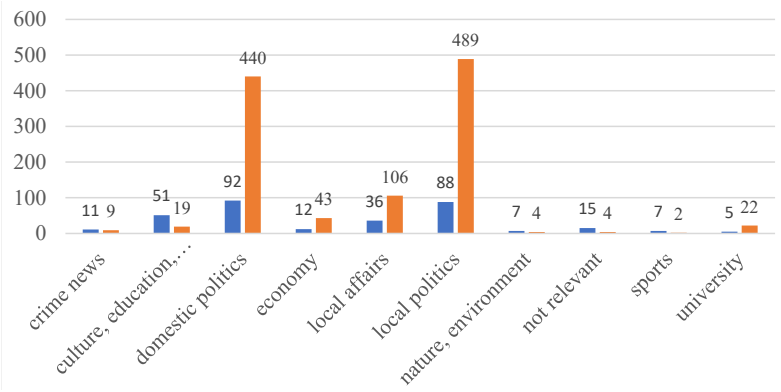

Figure 4. *Distribution of the number of topics and comments (n = 1,138) – May/June 2021 (n = 324)*

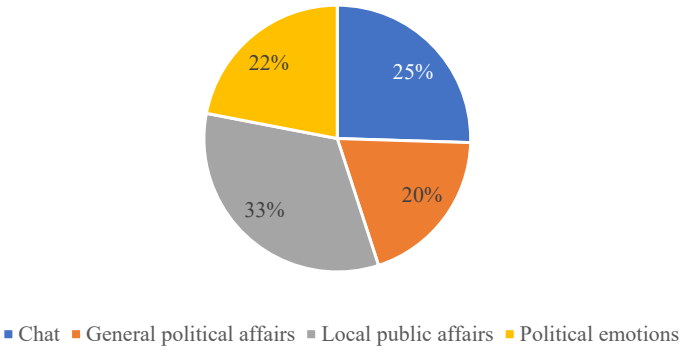

Figure 5. *Thematic distribution of comments within May/June 2021 posts (n = 1,138)*

The thematic diversity of the comments makes it relatively difficult to categorize them, but we have tried it anyway. The analysis showed (*Figure 5*) that most of the 1,138 comments dealt with urban public life, mostly with the relationship between local opposition parties, the activities of the town hall or the mayor, but also with opinions expressing everyday problems of urban life. Another group of comments dealt with more general, not necessarily local political issues: for example, the epidemic situation, identity politics, corruption, higher education, or the media. A similar amount of comments conveyed political sentiments, sometimes in the form of irony, sarcasm, clichés, stereotypes, even emoji, and sometimes in a vulgar tone. The fourth type of commentary was interpreted as neutral chatter, with the phatic function to maintain group communication.

4.1. Genres in the Pécs Chatter Group

Our previous quantitative content analysis can be complemented by identifying the genres of online communication in the Pécs Chatter group. The features of these genres are usually studied from the point of view of social pragmatics (Lomborg, 2014) or within the framework of digital anthropology (Miller, 2011). After all, it is characteristic of all arenas of online communication that different genres emerge and dynamically change based on the intentions of users, the content, and the stylistic elements they share.

The first genre we can identify is *political debate*. It is important to note that Pécs Chatter, despite the original intentions of the group's creators, has gradually become a forum mainly for voters for left-wing parties. Members of the local government, activists of the local NGOs, self-proclaimed political opinion leaders shared their posts regularly, and these posts have been actively debated by the members of the group. These disputes among the members reflected the changes in the local political scenery: the split between the local left-wing coalition leading the city, the controversies about the recall of a deputy mayor, and a growing disagreement between the mayor (Attila Péterfy) and a member of parliament (Tamás Mellár).

On the other hand, the Pécs Chatter group is also an arena for *discussing political news* that allows for a layman to connect to politics, so the second genre could be lay political discussions. During the two months we studied, ordinary users shared a lot of news content in the group and commented and debated about the members of the discussion group. Sometimes they even wrote independent posts, kind of citizen journalist articles about specific public affairs. It was a particularly interesting period in the town's public sphere because several national political issues with local relevance also surfaced at this time: the reorganization of the state university into a private foundation, the announcement of the construction of the football stadium in Pécs, the gay pride march that was also being organized in the city (first time in the country outside Budapest), or the problems of the coordination

of left-wing opposition parties in general and their preparations for the planned pre-elections. In contrast to the debates about issues of local party politics, lay political discussions were characterized by the use of less rational arguments in the comments, and the topics often provoked strong moral indignation and emotions.

The third genre of the Pécs Chatter can be called *disputes about local affairs*. There were a significant number of posts and discussions in the group that dealt with problems of the residents' everyday life. In May and June 2021, for example, members posted about wild boars destroying gardens on the outskirts of the city, the malfunctioning of the local bus schedule application, the changing traffic regulations on a street, and the slow renovation of another one. Discussions on such issues often mixed rationality with moral outrage or negative emotions about public conditions.

The fourth type of online genre appearing in the Pécs Chatter group is what we can call *classifieds*, or *announcements*. These are almost always politically irrelevant shares that elicited almost no reaction from the group members. In the group with a large amount of local cultural programme recommendations, the members tend to share other useful information of public interest such as changes in the local bus schedule or the closure of a parking lot.

5. Conclusions

It is not easy to summarize our results obtained from the field, but it is fair to say that combining general observations, interviews with participants, and the analysis of the content and the interactions on the forum helped us to draw more or less adequate conclusions about the role and the impact of political discussion groups on a social media platform. The group conversations in the Pécs Chatter group revolve around several topics; local party affairs and political issues are surely represented here, but news coming from local media outlets and, to a lesser extent, the postings about everyday urban problems gained more general attention on the part of the community. Some representatives of the opinion-forming political elite are active participants in the Facebook community, but, regardless of some minor issues, that platform has little or no effect on the actual decisions made by the city council. On the other hand, the group offers an opportunity to have meaningful conversations about politics with ordinary people living in and around Pécs, mostly for those who are sympathetic to the current leadership of the city and critical of the right-wing Hungarian government. In contrast to the rational debate on urban issues, the style of these is very often characterized by negative emotional reactions and moral criticism. This exemplifies the instrumentality and the rational and expressive duality of online communication: on the one hand, it provides an opportunity to participate in actual political struggles and debates,

but, actually, this option is limited to expressing opinions and feelings about politics (Dahlgren, 2018: 14).

This brings us to the fundamental question that underlies these dilemmas but which has so far only been a peripheral issue: is it possible to interpret local politics in a way that is independent of national political processes? Are there formal and substantive criteria that are necessary and sufficient to define it? Although a naïve understanding of local politics would suggest to us that it is determined by opinions, arguments, and considerations that are more or less independent of national party political processes, we must be fundamentally sceptical about this.

Doubts are not only caused by the increasing polarization of opinion in the current public sphere and the presence of government propaganda that seems to dominate all communication channels but also by the individualized nature of networked locality (Gordon, 2008) based on ephemeral communities and the fragmentation of the networked public sphere. An examination of online interactions alone could very easily lead us to the conclusion that in the new media environment, the manifestation of issues, positions, debates, and social experiences that originally constituted the content of (local) politics are replaced by emotional commitments to political camps and corresponding reactions. The affective publics that emerge on social media platforms (Papacharissi, 2015) and the new political communication strategies that exploit the operational logic of platforms to dominate the attention economy (Böcskei–Nagy, 2021) seem to confirm the presence of the latter dynamic.

At the same time, further analysis may also reveal that a smaller share of "local politics" takes place through social media platforms, and a significant part of it is still taking place behind the scenes through kinship systems and networks of personal relationships based on commitments.

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What Is Vaccine Diplomacy?

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Abstract. The phrase "vaccine diplomacy" spread in the media during the COVID-19 pandemic. The authors examine where it comes from and locate it in health-related strategic communication. The article provides an overview of the history of vaccine diplomacy taken from the literature and then places the phenomenon among the branches of specialized diplomacy as well as among the components of public diplomacy. It highlights the difference between vaccine diplomacy and 20th-century public diplomacy. The article concludes that vaccine diplomacy as a tool of soft power and persuasion hardly differs from vaccine solidarity announced by the G7 member states. In fact, the only difference between vaccine friendship, vaccine diplomacy, and vaccine solidarity is in the perspective, that is, the evaluation by the speaker. These phrases are manifestations of the rivalling narratives that accompany the global power shift.

Keywords: vaccine diplomacy, public diplomacy, solidarity, soft power, influence

1. Introduction

In 2021, India, one of the world's centres of vaccine manufacturing, launched a project named *Vaccine Maitri* (Vaccine Friendship), within the framework of which it distributed COVID-19 vaccines to 95 states until May 2021, as it was published on the home page of the Indian Ministry of External Affairs (Sharun–Dhama, 2021). Besides business deals, it donated vaccines to 47 of them, including neighbouring countries of India, a number of African states, and Albania in Europe (Suzuki–Yang, 2022: 10–13). In addition, India donated 0.2 million vaccines for the immunization of United Nations peacekeepers and proposed the temporary suspension of intellectual property rights of the COVID-19 vaccines. Although the suggestion was endorsed by the Director-General of the WHO, it was rejected

by the United States, Norway, and the European Union (Sharun–Dhama, 2021). The explanation is probably not that the opponents of the proposal did not want to establish "vaccine friendship" but rather that they intended to use the means of "vaccine diplomacy" in a different way. In this article, we will examine the definitions of vaccine diplomacy and try to place it among the components of public diplomacy as well as in the system of Organized Persuasive Communication. Our aim is to clarify the meaning of the term.

2. Vaccine Diplomacy in the Historical Perspective

Vaccine diplomacy re-appeared in political discourse during the COVID-19 pandemic and set the agenda of politics for about two years. A study proves that the phenomenon is not a novelty (Hotez, 2014), similarly to epidemics: health diplomacy can be traced back to the 14th century, and vaccine diplomacy can be linked to the development of the first modern vaccine in 1798, although the phrase itself was coined only in 2001. Hotez summarizes the milestones of health diplomacy and vaccine diplomacy, in the context of which two Cold War events should be highlighted: the visit of Dr Albert Sabin to the Soviet Union between 1956 and 1959 in order to test the oral polio vaccine on ten million children, in collaboration with his counterpart, Dr Mikhail Chumakov. The other example is the worldwide anti-smallpox campaign from 1962 to 1966, conducted with the vaccine developed by the Soviet Union and the financial support of the USA, which was a form of joint aid to developing countries (Hotez, 2014: 3). These historical events prove that even opponents or rivals may have the intention to collaborate in the interest of humanity, in fields like epidemiology, vaccine development, trial, or delivery.

On the basis of the above, vaccine diplomacy could be associated with international relations and talks connected with vaccine manufacture, sale, and purchase. Nevertheless, the sense of this term is broader in the literature, and especially in the media. Some aspects will be discussed in the following. In his mentioned article, Hotez uses the phrases "health diplomacy", "vaccine diplomacy", and "vaccine science diplomacy" (2014). In his view, vaccine diplomacy can be used for any area of global health diplomacy that is connected to the use and transport of vaccines, often comprising the works of the GAVI Alliance, the WHO, and the Gates Foundation. In 2021, Western media outlets and some Asian articles used "vaccine diplomacy" for the mass global vaccine rollout of states such as China, Russia, and India (Wigmore, 2021).

Whether health or vaccine diplomacy is related to the umbrella term of public diplomacy, and whether it has positive or negative connotations, needs further examination.

3. The Changing Concept of Public Diplomacy

The term "public diplomacy" is relatively new: it was created in 1965 and became widely used after the end of the Cold War (Cull, 2008). It was preferred by experts in the United States as a replacement of "propaganda", which was disgraced due to historical experience (Gregory, 2008: 275). The umbrella term involved the international information activities and cultural relations as well as broadcasting designed and sponsored by the US government. Public diplomacy aims at shaping the perceptions of foreign audiences (and nowadays, because of the omnipresent Internet, of both foreign and home audiences) in the direction desired by the sponsor. Thus, it depends on specific geostrategic contexts, interests, values, and identities. This is the reason why public diplomacy and the underlying political discourse are changeable.

Some scholars identify three types of public diplomacy in the light of the context: classic Cold War public diplomacy, local public relations, and a non-state or transitory model (Simon-Nagy, 2012: 64–71). Nevertheless, these provide only frameworks for the stakeholders who shape them according to their resources. Each state has developed a model that relies on their long-term geopolitical objectives.

Experts claim that public diplomacy is the official political means to put soft power resources into practice (Gilboa, 2008: 61). In this sense, public diplomacy is an official non-coercive (soft power) tool to influence other people's behaviour. It also builds on creating a positive impression about a country whose experts designed it. It is termed nation branding, although the literature doubts whether the two phrases have the same meaning; for instance, Szondi analysed the two terms in his study entitled *Public Diplomacy and Nation Branding: Conceptual Similarities and Differences* (2008b). In another study, Szondi (2008a) elaborates on the difference between so-called conventional public diplomacy and 21st-century public diplomacy. He says a country often conducts interactive communication with the public of a foreign country while trying to create a favourable reception and a positive image. In his view, the foundation of direct contact is cooperation and shared values. Nevertheless, we think this does not apply to vaccine diplomacy in all respects. On the contrary, in this new branch of public diplomacy, which is taking shape nowadays, the context of messages is different because it reflects competing ideologies and diverse values instead of cooperation and shared values. At the same time, the conductors of vaccine diplomacy rely on the amplifying effect of concerted media campaigns, which is essential for any organized persuasion.

4. Vaccine Diplomacy and Public Diplomacy

Vaccine diplomacy can be interpreted as a type of "propaganda of the deed" (Smith, n. d.). One of its forms may be providing economic aid, whose actual aim is to gain influence. On the other hand, it may be a tool of public diplomacy designed by governments in order to make the public of other states accept their aspirations or even make foreign audiences support their objectives. It is known that public diplomacy as a strategic campaign sponsored by a government involves the use of international media to describe the stakeholder's policy in a favourable way (Public Diplomacy, n. d.).

Public diplomacy is regarded as one of the specialist branches of diplomacy (such as sports diplomacy, economic diplomacy, environmental democracy, defence diplomacy, media diplomacy, and cultural diplomacy) (Bába et al., 2018: 93–94). In this sense, it comprises all of the international relations' persuasive attempts at influencing foreign public, and it can also be named "people's diplomacy", including interactions of non-state actors who facilitate the implementation of a given state's foreign policy. For this reason, it is regarded as an element, or rather a manifestation of soft power.

As to the interrelationship between public diplomacy and soft power, Joseph Nye (2008) explains that soft power cannot be identified with influence since the latter can also be the result of hard power, that is, coercion. For Nye, soft power is more an ability to attract, which originates from the values expressed in the guiding principles and culture of a country or an organization acting in international politics, and the way it accordingly manages its external relations (Nye, 2008: 95). In the information age, competition takes place for attention and credibility, and public diplomacy relies on three pillars: culture, political values, and foreign policies (Nye, 2008: 96–101). The three need to be in harmony so as to achieve the desired impression of legitimacy, reliability, and authority – that is, attraction. Consequently, public diplomacy is not the same as public relations campaigns and is not another euphemism for propaganda. Though, similarly to these, the transfer of information and the construction of a positive image also constitute part of public diplomacy, its priority is the establishment of long-term relationships aimed at ensuring a favourable environment for the policy of the stakeholder state. Public diplomacy is often centred on deeds that may be more effective in exercising soft power than telecommunications (Nye, 2008: 104; Leonard et al., 2002: 53). On the basis of the above, vaccine diplomacy can be placed in the comprehensive toolbox of public diplomacy suggested by Gilboa (2008: 74) and complemented by the authors.

5. A New Way of Building Soft Power: Vaccine Diplomacy during the COVID-19 Pandemic

The Middle East Institute of Washington defines vaccine diplomacy as the utilization of vaccine transports for projecting soft power (Woertz–Yellinek, 2021). Similarly, an analysis published by the Center on Public Diplomacy of the University of Southern California (Ellwood, 2021) concludes that vaccine diplomacy has been a demonstration of the force of soft power. Ellwood remarks that the historical predecessor of soft power has been prestige, which each state in the world would like to acquire, and offers an approach different from Nye's. Ellwood thinks that soft power is a mechanism that associates with traditional power (military, economic, geopolitical) where influence is combined with innovation, development, and modern society (Ellwood, 2021). The countries aiming at gaining soft power through vaccine diplomacy try to provide evidence that they are able to manufacture and transfer their products worldwide. This applies to the countries of the first vaccine developers using their corporations for getting real soft power advantages, and it also reflects the competition between the early and later developers. This phenomenon extends the concept of vaccine diplomacy: it is not only that states negotiate their affairs concerning specific vaccine purchase and transport via (health) diplomacy. In addition, states that have opportunities for vaccine manufacturing and sale or donation use their capabilities for gaining prestige and influence.

India, for instance, exploited its advantage in vaccine production when it offered vaccine transports and donations in tribute to its neighbours and other, less developed countries. It can be regarded as a move in public diplomacy, especially because it is likely to improve India's relationship with those countries. Vaccine diplomacy contributed to the solution of problems which were seemingly unrelated to the pandemic, for instance, when Israel bought a shipment of Sputnik V vaccines from Russia for the Syrian government within the framework of a deal on the exchange of prisoners (Jennings, 2021).

6. Vaccine Diplomacy and Related Concepts in the Model of Public Diplomacy

Following the overview of definitions, vaccine diplomacy can be located in the model of public diplomacy developed under the theory of the means of soft power. Several components of Gilboa's model (2008: 74) can be connected with vaccine diplomacy, such as public opinion and the related terms of psychology and sociology, as well as rhetoric, media effect, and technology, because of the

mediatized modern politics. This also illustrates that public diplomacy is a flexible concept owing to its interdisciplinary character, that is, its efficiency depends on the collaboration of experts of various fields.

On the basis of Szondi's model (2008a), vaccine diplomacy can be placed in the context of international relations. Szondi's model compares conventional public diplomacy with 21st-century public diplomacy and takes into account factors such as circumstances, objectives, strategies, flow of communication, context, target audience, channels, and funding. Circumstances describe the general international political conditions, while context refers to the communicative factors that impact the content and formulation of a message.

Taking into consideration this model, 21st-century vaccine diplomacy is different regarding circumstances, objectives, context, and target audience. The circumstances are fundamentally peaceful but involve new tensions rising from the COVID-19 pandemic, and the global power shift is probably moving from a unipolar world order to a multipolar one. The US, China, Russia, the European Union, and India (the last one aspiring at regional leadership at least) are competing in various fields of international relations on the world stage for proving their right to be a leading power. As a result, their objective is to advance their economic and political interests by extending the circle of partners and allies better or faster than their rivals. Thus, the context of the messages is provided by the struggle of ideologies, values, and interests. The target audience is the global public because of the channels of communication, which include conventional and social media, the latter even targeting individuals with the help of profiling. That is, the home public and the public of potential allies (also the public of rivals) are targeted simultaneously. In summary, the most prominent characteristic of 21st-century vaccine diplomacy is that it is a tool of power struggle and persuasion, targeted at the global public and aiming at attracting allies and discouraging rivals. These factors relate vaccine diplomacy and the connected communication to the "political warfare" of the Cold War era, which involved fierce ideological struggle, too (Jowett–O'Donnell, 2015: 233).

Ideological struggle involves values and principles (depending on culture, such values are, for instance, human life, performance, freedom, or profits), but, as it was said above, the clash of the interests of various actors was a decisive factor of the context and of their communication. As regards communication, we cannot talk about a dialogue between state or non-state actors only, as the role of international organizations and their messages cannot be ignored. Let us take the example of India mentioned at the beginning of this article: after the proposal on the suspension of vaccine-related intellectual property rights, both the WHO and the European Union stated their opinion (Sharun–Dhama, 2021). It can be assumed that the public of any country, whether it was targeted by public

diplomacy operations or not, consumed a mixture of all the messages thanks to the Internet and social media.

Background research on the effectiveness of the vaccines provided valuable information to the public, but its media leaks and the adverse media campaigns conducted by either rival states or rival pharmaceutical companies resulted both in an ideological struggle and a commercial war. The rumours about the possible side-effects of the Astra Zeneca vaccine, for instance, intimidated both patients and potential buyer states, not to mention the week-after-week publication by the manufacturer country of each vaccine on its outstanding efficiency and on the low efficiency of the vaccines of the competitors. It seemed as if each actor involved wanted to prove their technological superiority with ideological bias. With the climate of fear from the disease and the astonishment of citizens about extraordinary security measures taken by the governments, the media environment resembled more the "psychological warfare" of the Cold War era – the American term for British "political warfare" (Jowett–O'Donnell, 2015: 233) – than the civilized 21st-century circumstances described in Szondi's public diplomacy model. Background research on the impact of such media content was easily available in the form of software.

7. The Vaccine Solidarity of the G7

At the G7 summit held in Carbis Bay between 11 and 13 June 2021, the European Union was represented by Charles Michel, President of the European Council, and Ursula von der Leyen, President of the European Commission. The host of the summit, the United Kingdom, invited the leaders of Australia, India, South Korea, and South Africa to some of the sessions. The participants announced that they would provide two billion COVID-19 vaccines for countries suffering from vaccine shortage in order to help contain the pandemic (G7 Summit, n. d.). The participants also promised to accelerate the manufacturing of the vaccines and to take a constructive attitude towards the right to intellectual property at the talks with the World Trade Organization.

According to the information on the home page of global solidarity during the COVID-19 pandemic (n. d.) and a related infographic (Infographic COVID-19, n. d.), the European Union offers 2 billion vaccines to poor countries within the framework of the COVAX global initiative, of which 1.3 billion will be available for 92 low- or medium-income countries by the end of 2021. Just like the home page of the Ministry of External Affairs of India, the 2021 G7 summit home page publishes statistics on countries that received aid until June 2021. Among others, Ghana, Cambodia, Moldova, Indonesia, Afghanistan, and Honduras are mentioned.

The title of the infographic home page is "Infographic – COVID-19: the EU's contribution to global *vaccine solidarity*" (emphasis added by the authors).

All the vaccines listed on the home page have been developed and manufactured in Europe, except for COVOVAX and COVISHIELD, the Indian versions of the Astra Zeneca vaccine. Other international organizations such as the WHO, UNICEF, GAVI, The Vaccine Alliance and CEPI, or the Coalition for Epidemic Preparedness Innovations also participate in the vaccine aid project. In addition, the G7 home page gives a detailed overview of the financial support provided to non-EU countries, part of which is low-interest credit. The news and data use the phrase "vaccine solidarity" consistently, and the terms "health diplomacy" or "vaccine diplomacy" do not appear.

8. Conclusions

In a study trying to introduce a comprehensive model of Organized Persuasive Communication, Bakir et al. (2018) discuss the various types of persuasion used in our modern world and emphasize that one reason for terminological confusion is the decisive role of point of view. Actors in modern democracies attribute "propaganda" campaigns to so-called autocratic states, whereas no state can function without forms of influence either impacting their own population and aiming at the public support of policies or establishing their position in the international arena. In our modern age, other actors can be added, such as corporations, international organizations, or NGOs. The difference lies in the degree of transparency and coercion or the lack of it. The continuum of organized persuasive communication ranges from strategic dialogical communication through strategic one-way persuasion – which are consensual, that is, the target audience are aware of the persuasive attempt and of the source – to manipulative, deceptive coercion. Public diplomacy and its specialized areas of health and vaccine diplomacy are located at the consensual, transparent end of the scale. Still, the meaning of a seemingly neutral phrase can be shifted towards the other end if it is put into an emotionally negative context.

In our article, we have proved that a term for an activity in international relations can express ideological stance and, in fact, can become a tool of ideological struggle and of rivalry. The language describing the activities of each agent reflects the current geopolitical competition. The donation and sale of COVID-19 vaccines by so-called "revisionist states" (Mead, 2014), which intend to change the current world order and reposition themselves, was labelled *vaccine diplomacy* by the "status quo states", which had an interest in protecting their leading positions and alliances. The same "status quo states" named their similar activities *vaccine solidarity* so as to delineate them from the objectives of the "revisionist states".

India, which is often described as a rising regional power, named the same vaccine donations and sales *vaccine friendship*. Consequently, these terms are not primarily about health diplomacy, the specialist branch of public diplomacy, but about the geopolitical situation and political ambitions.

Vaccine diplomacy, if considered a neutral term, however, can either be placed in the inventory of public diplomacy within health diplomacy or, due to the securitization of epidemics (Seeger–Sellnow, 2019) and the COVID-19 pandemic (Molnár et al., 2020), it can be considered an independent specialized branch. In its meaning free of evaluative and emotional connotation, it could be a component of health diplomacy. It has a long history, and in the Cold War era or in the early 2000s it even involved the collaboration and cooperation of great powers for the prevention and eradication of epidemics and pandemics. During the COVID-19 pandemic, however, it received negative connotations because of the geopolitical situation: Western powers were suspicious about the vaccine development, sales, and donations of China and Russia, seeing these as attempts to gain influence. The G7 member states launched the COVAX programme jointly with the European Union, attempting to counterbalance the political and economic effects of vaccine diplomacy, the elements of which were similar to the activities of the rival powers. In their strategic communication, they emphasized the ideological differences and competing interests by the consistent use of the terms "vaccine diplomacy" and "vaccine solidarity".

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Social Sustainability in Medicine: The Role of Artificial Intelligence in Future Doctor–Patient Communication. A Methodological Experiment

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Abstract. Social sustainability is a development alternative that focuses on preserving and sustaining opportunities and resources for future generations rather than exploiting them. In addition to resource management, it is important to emphasize the focus on human well-being, in which the provision of a healthy life is a key factor. One possible alternative to improve the quality, safety, and affordability of universal healthcare is to integrate artificial intelligence into the health system. The development of AI in healthcare has brought a paradigm shift, as big-data-driven analytics can enable AI itself to identify symptom complexities and communicate with patients. In this process, it is important to explore the attitudes of healthcare professionals towards AI-based technologies, as doctor–patient communication is moving away from authoritarianism towards partnership medicine, in which AI will be an integral part of communication. In my research, I investigate the attitudes of future doctors, i.e. medical students and doctors already in practice, towards AI by using a hybrid research method of semi-structured interviews, photo collage techniques, and a questionnaire survey. The photo collage technique, due to its projective nature, can be used to reveal the respondent's underlying evoked memories and attitudes. The new image network (collage) can be used to model the doctor–patient–AI relationship envisioned by the doctors. The results highlight the aspect of the application of AI in medicine and point out that it is not only the capabilities of the software but the attitudes of the entire health stakeholder community that influence the uptake of innovation. The exploration of issues of authority and trust in the field provides an opportunity for the creation of educational and outreach programmes.

Keywords: artificial intelligence, doctor–patient communication, attitude, photo collage technology, healthcare

1. Introduction

According to Bertalan Meskó and his colleagues (2017), the paternalistic model of doctor–patient relationships of the past decades has started to be replaced by shared decision-making, of which AI is an integral part. "The conceptual triad of automation, robotics and artificial intelligence, which is slowly but surely transforming digital technologies into autonomous agents, plays a major role in the increasing symmetry of human–machine communication" (Bokor, 2021: 3).

In my research, I explore the doctor–patient–AI relationship from the perspectives of doctors, medical students, and residents using interviews, photomontage techniques, and questionnaire methods. My research findings draw attention to the aspect of the application of AI in medicine, what are the current attitudes of healthcare workers towards AI, what perceptions will enable AI to be a participant in healthcare interactions, and what role it will have in the modern medical system.

In the first unit of the literature review, I present the doctor–patient relationship in addition to describing the differences between doctor-centred and patient-centred medicine and decision-making. I also discuss the issues of medical authority and technology as a new agent. I introduce the concept of artificial intelligence in general and then the use of AI in healthcare. In the last part of the theoretical background presentation, the concept of attitude, its axes and functions will be explained in relation to AI, which is relevant to the topic because although we cannot yet observe the process itself when AI is part of the consultation, we can infer the direction of AI technology development from the doctors' attitudes (Forgács, 2017).

2. Doctor–Patient Communication

Empirical research on doctor–patient communication began in the 1970s. Research conducted by Korsch and Negrete in the United States in 1972 showed that the consequence of a lack of (medical) information sharing was that patients were less likely to follow their doctor's advice, or not to follow it at all. Byre and Long (1976) examined two thousand five hundred voice recordings between doctors and their patients, revealing that these dialogues were largely doctor-centred. What does doctor-centredness mean in communication with patients?

"The main characteristic of doctor-centred communication is that its aim is to obtain information quickly, on the basis of which a diagnosis is made, which is briefly communicated to the patient, together with the further necessary action to be taken" (Málovics–Vajda–Kuba, 2009: 253). During a consultation, the doctor dominating the conversation expresses his/her own point of view and gives only a small chance to the patient to ask questions or interpret his or her illness, thus

suppressing the patient's emotions and resolving his/her doubts about the diagnosis. The relationship between doctor and patient is essentially hierarchical, as medical expertise and greater access to information empowers the practitioner, while patients come to the doctor worried, in pain, and in need of help, putting them in a weaker position in the discourse (Mast et al., 2011). The lay patient, in a subordinate role, delegates the right to decide to the doctor, but also the responsibility, which he or she will be held accountable for in case of a possible error or complication.

The literature (Emanuel–Emanuel, 1992; Klemperer, 2005) describes physician-centred communication as a paternalistic style, in which the relationship between the competent expert and the lay patient is asymmetric and the physician makes the decision independently, which s/he communicates to the patient. In paternalistic medicine, patients' trust in physicians is of paramount importance, as it significantly influences their willingness to cooperate, the sense of control, and perceived risk reduction (Kincsesné, 2013). Based on the results of qualitative research among physicians, nurses, and patients by Málovics and co-authors (2009), paternalistic medicine is dominant in Hungary, in which the patient is in a dependent relationship with the physician providing expertise. This was indicated by the fact that people accept the asymmetric relationship created by the knowledge gap and delegate the right to make decisions to competent doctors in order to improve their health.

3. Patient-Centred Communication Models

According to Emanuel and Emanuel (1992), four communication styles can be distinguished in doctor–patient communication, which are: paternalistic, consumeristic, interpretive, and mutual consultation. In contrast to the physician-centred, paternalistic style, the patient-centred styles start from the patient's perspective, from the patient's decision-making status. One of these styles is the consumer model: "control is in the hands of the patient, the patient sets expectations about the doctor's actions, the doctor offers his expertise to the patient, fulfils his expectations" (Boronkai, 2014: 19). The consumer model, according to Ágnes Kuna (2020), can be used for preventive tests (e.g. screenings, artificial insemination), but these are not sufficient in themselves to make a diagnosis, so at some point decision-making is again in the hands of the doctor. The other patient-centred style, according to Emanuel and Emanuel (1992), is the interpretative style, which is an attitude-centred model in which the doctor offers the patient possible therapies and intervention options, and the patient makes the decision according to his or her attitudes and values.

Shared Decision Making (SDM) is a style of mutual consultation in which the doctor and patient participate together as partners in the process of improving

health and making decisions (Vajda–Horváth–Málovics, 2012). Elwyn et al. (2012) break down the SDM method into three practical steps to facilitate its application. The first step is the discussion of options, where the expert lists the options, and then, after discussing them in detail in the second phase, they jointly consider the best option in the third phase. In all cases, the success of the method should be built on providing information and supporting dialogue. The doctor should help the patient to understand any concepts that may be unfamiliar to him/her, thus helping to engage him/her in the partnership, and the doctor him-/herself should explore what the patient already knows about his/her illness in order to ensure that these are sufficiently correct and scientifically based facts. In supporting dialogue and deliberation, it is important that the patient does not feel that he or she has to make decisions alone, as they may feel abandoned, which can lead to a withdrawal behaviour in some patients (Elwyn et al., 2012: 1363).

The practice of modern medicine is undergoing a reordering as a result of social and technological advances, whereby collaborative thinking and decision-making is taking place in the interest of efficiency. The lack of trust in ethical regulation (such as the existence of a medical oath and authority) in the renewed medical practice is due to changes in the legal status and powers of the patient and the gradual loss of unconditional trust and respect for doctors.

4. The Role of Technology in Doctor–Patient Communication

Technological progress has brought changes in the healthcare sector, as new ways of communication have emerged alongside medical instruments and databases. "First the landline telephone, the fax, the computer, later the mobile phone, the smartphone, and with the rise of the Internet, e-mail, online therapy (especially in psychiatry), forums, blogs, websites, social networking sites, e-health, etc. are becoming increasingly available" (Molnár et al., 2018: 2137). However, knowledge sharing and access to information alone is not enough to match medical expertise, so it is important to mention the concept of media literacy.

Media literacy is a set of skills used to make sense of a given mediatized communication. It is the competence to interpret the information that comes to us, through its source and its nature. In the online space, compared to traditional media, there is the possibility to discuss information in a community (for example, in comment sections), opening space for online community collaborations (Aczél–Andok–Bokor, 2015: 202). Thus, in the doctor–patient relationship, the information asymmetry is reduced by greater access to data via the Internet, but its conscious analysis, the interpretation of sources, databases and the understanding of the interests behind

them require other, already higher-level competences. "For science, digital media have brought open access and for the layperson the prevalence of pseudoscience" (Aczél–Veszelszki, 2018: 11). Some scientific publications are freely available to patients, but these are usually difficult to interpret without prior training. However, when searching for more easily consumable content, there is a risk of finding news and content on the Internet that is not from a credible source. This non-scientific content is called pseudo-scientific content, which, in order to be more easily consumable or to suit the interests of the content producer (e.g. offering a quick cure), makes relative interpretations of scientific findings (cf. Veszelszki–Falyuna, 2019).

According to a qualitative study (Győrffy–Meskó, 2012), almost 76% of the doctors do not think it is appropriate for their patients to research their illness on the web. Their fears include the possibility of being misinformed and the deterioration of the doctor–patient relationship. A 2012 study (Sára et al., 2013) aimed to explore the limitations of doctor–patient communication, interviewing both doctors and patients. The results were that "the most important limiting factors included lack of time, patient anxiety, inadequate health culture, and lack of communication skills of some doctors" (Sára et al., 2013: 7).

How can technology address these? So-called "self-tracking" apps and software are becoming increasingly popular today, which help us monitor our activities and lifestyle, and by sharing the results with our doctor, we can help him or her to gain more information about our health culture in a shorter time (Molnár et al., 2018). It is important to add, however, that patient proactivity does not replace but only reinforces the importance of doctor involvement, and the differentiation of responsibility is also important.

5. What Is Artificial Intelligence?

The main obstacle to defining artificial intelligence is our concept of intelligence, which, according to Didem Ozkiziltan and Anke Hassel (2021), is still uncertain despite the wide range of studies on the subject available from different fields of research (such as psychology, neuroscience, etc.). So, until we know exactly what human intelligence is, how it is built, what parts it has, what functions it performs, we cannot claim with absolute certainty that a software can reproduce it. This problem is also raised by György Csepeli (2020) in his book *Human 2.0: The Economic and Social Impact of Artificial Intelligence*, in which the author explains that intelligence is a function of the network in the human cortex that we consider to be the whole of human consciousness, which is also an ill-defined concept. Artificial intelligence is therefore a generic term for the most part, so rather than giving a precise definition, I will attempt to summarize its categories and the common elements of attempts to define it.

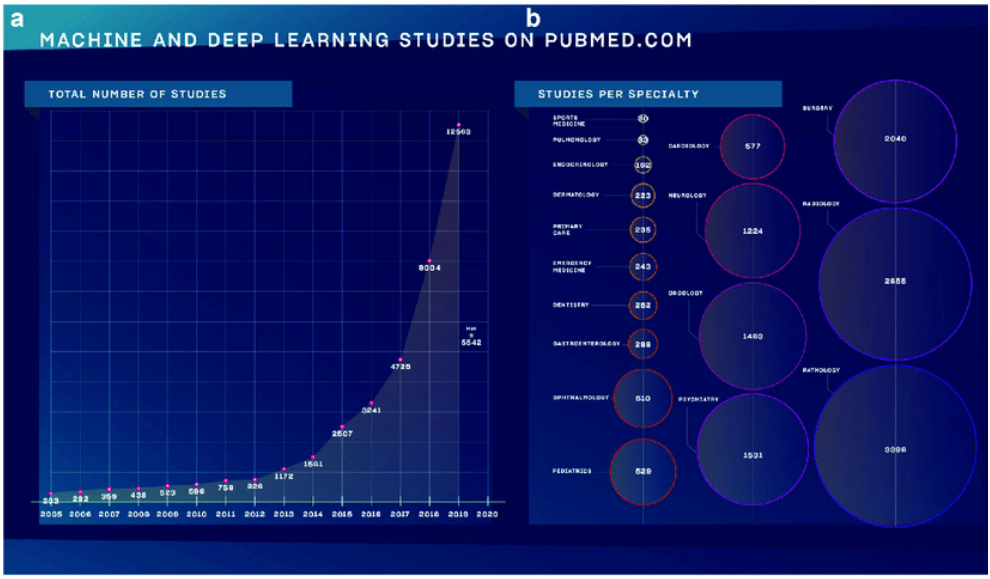
Ferenc Mező and Katalin Mező (2019) divide AI-based systems into two groups: on the one hand, software that operates in digital space, with no extension in physical space, and, on the other hand, software embedded in hardware such as self-driving cars or robots. So, artificial intelligence cannot only be in the form of robots but can also be entirely digital. This categorization of AI is in line with the one used by European Parliament researchers (w1), which distinguishes between software-based and physical types of AI.

Another categorization is the classification by capabilities. AI technologies can be classified into three categories based on their ability to mimic human characteristics, the technology they use, the actual application, and our concept of human consciousness, according to Eban Escott (2017). The first level in the categorization of AI by capability is Artificial Narrow Intelligence (hereafter: ANI), which is goal-oriented and designed to perform specific tasks such as facial recognition, speech recognition/voice assistant, driving a car, or searching the Internet. In the activities for which it is programmed, ANI-level technology excels, but it lacks autonomous consciousness, falling short of human intelligence in terms of flexibility. The next level is Artificial General Intelligence (AGI), which is the concept of a machine with human-like intelligence. It can mimic human intelligence, behaviour, and learning. Currently, the technology has not yet reached this stage. The top category in terms of capabilities is artificial superintelligence, or ASI, which not only mimics or understands human intelligence and behaviour but also surpasses it (Escott 2017). In line with ASI, Domingos (2015) foresees the possibility of developing the perfect algorithm, where his basic premise is that if human consciousness is capable of solving all problems, with the help of a conscious algorithm, all problems can be solved. Whoever is the first to develop this "master algorithm" will have a major impact on the balance of power in the world.

6. The Use of Artificial Intelligence in Healthcare

According to the European Commission's Communication on a coordinated plan for Artificial Intelligence (w1), health is a priority sector for the development and use of AI. The last decade has seen a significant increase in research and publications on the application of AI in health. Bertalan Meskó and Márton Görög (2020: 1362) summarized in a visual format the increase in the number of publications on AI topics on Pubmed.com and their distribution by discipline.

In *Figure 1*, the left graph shows the rate of increase in the volume of AI-related medical studies, while the right graph shows their distribution by specialization. Most publications are in pathology, while the fewest are in sports medicine.



Source: Meskó–Görög, 2020: 1362

Figure 1. *Medical AI applications between 2010 and 2020 and by medical speciality*

According to Szalavetz (2019), AI aids diagnostics through its image recognition function by analysing X-rays, CT scans, and other images. However, this requires a large dataset, which is collected by both government and private institutions. An example is the Deep Patient project, in which AI can predict illness, length of stay in hospital, and the likelihood of readmission by analysing the patient's health data and recording their data upon arrival, 24 hours following their admission into the hospital, and upon their discharge (Rajkomare et al., 2018). So far, it performs best in predicting severe diabetes, schizophrenia, and various cancers (Miotto, 2016). However, data can be provided not only by health systems or large companies but also by patients. Csepeli (2020) highlights the potential of using data from self-tracking tools, which can use artificial intelligence to help detect abnormalities at an early stage and predict hereditary diseases based on genome information.

Methods that have not yet been used in live clinical trials, but are working, are reported by Devosa and colleagues (2021), who use speech processing to measure the stage of Parkinson's disease and image processing to measure eye and lung disease in patients. However, this would require more labelled (annotated) data, which hospitals cannot provide, as this would be a serious breach of data protection guidelines. There are therefore some ethical questions about AI in healthcare. Buzás (2021) raises the following moral dilemmas in this area. From a data processing point of view, it is questionable whether the amount of data offered voluntarily is

sufficient for the development or whether it needs to be regulated at a higher level. The issue of accountability can come into focus when AI fails, as it can; hence one of the most socially sensitive questions: can AI take the place of humans (in this case, doctors)? So, the fears have been outlined by exploring the ethical concerns, but what expectations might doctors have as a result of letting AI in?

7. Attitudes

The objective of this paper is to explore the attitudes of doctors and medical students towards the use of AI in healthcare. As outlined in the discussion of ethical dilemmas in the previous chapters, there are many ethical, resource, or technological factors that make AI not yet fully accepted in its application. It is important to assess the attitudes of health professionals towards AI, the perceptions along which AI can be a participant in health interactions, and the role it is playing in the modern medical system. This can be explored by looking at the attitudes of healthcare workers, as their attitudes influence both the acceptance of the technology by patients and the direction and pace of developments in healthcare.

What is attitude? How will attitudes be measured? As Ágnes Domonkosi (2007) summarizes the consensus in the literature: attitude is a persistent attitude of value judgements that helps individuals to cognitively classify a person, object, or concept, but it reflects not only the attitude of the individual but also, through its social embeddedness, that of the communities of which it is part of. Attitudes thus express the value system of a community, its beliefs on a particular subject. The responses of the doctors interviewed in the research also reflect the views of the medical community because they present the community's views on the issue through their own attitudes. Attila Forgács (2017) summarized the definitions of attitude, in which three recurring elements can be observed: emotional attitudes, cognitive attitudes, and behavioural manifestations. These are called the affective, cognitive, and conative axes of attitude.

8. Methodology

Doctor–patient communication is most often studied through process or discourse analysis, which is most often criticized for lack of context and representativeness. According to Kuna (2020: 287), the solution to these criticisms can be found in their blending, as both the sequentiality of discourse and the shared meaning-making are important because they reinforce the pragmatic view that communication is not a tool but an activity.

I do not focus on the discourses or processes between doctor, patient, and AI but on the attitudes of health professionals towards the new actor that may enter the system. In Hungary, the integration of AI into public health has not yet taken place, so this (transitional) state provides an opportunity to assess current attitudes towards the inclusion of AI-based systems, which will be increasingly applied in the near future. When will AI become a real participant in the health system, and in what role will it be largely influenced by the current attitudes towards it? In this exploratory research, I use a hybrid method of semi-structured interview and photo collage technique to assess the attitudes of physicians. The five physicians were selected from Budapest and its surroundings for ease of access, all of them practising specialized care in Budapest.
In my research, I investigated the attitudes of not only the currently practising physicians but also of future physicians among the participants of the healthcare stakeholder system. I measured the attitudes of seventy medical students and residents towards AI using a questionnaire method, which allowed me to investigate the intensity and direction (quality) of attitudes, as well as the potential uses and risk factors they identify in the issue of AI uptake.

9. Research Results

The methodological experiment demonstrates the potential of the photo collage method for mapping attitudes and identifying cognitive structures. In order to explore attitudes towards AI, I first analyse semi-structured interviews with doctors and attitudes revealed using photo collage techniques, and, finally, I report the results of a questionnaire completed by medical students in the analysis.

9.1. Analysis of the Semi-Structured Interviews

The attitudes of the doctors participating in the research are first analysed according to the cognitive axis of attitude. This is the attitudinal axis, i.e. it explores the relevance of the questioning about AI and the current knowledge about AI among the interviewees. This is followed by a presentation of the affective axis to identify the intensity and quality of the attitude by exploring the emotional background of the opinions expressed. Finally, there is the communal nature of the attitude and the highest level of behaviour.

Cognitive Axis – The Relevance of Artificial Intelligence in Health

During the interview, I asked the doctors to recall when they first encountered AI in their careers. Their answers suggested that they had not heard about the

technology in their daily medical practice but rather in connection with research and publications. With one exception, the interviewees reported that AI was new in their field and had been discussed less than a year before. However, Doctor 1 reported that AI had been a long-standing topic in pathology.

The respondents' attempts at definition show that they are familiar with the current state of the technology in terms of software, being able to take over sub-processes and thus see the technology as applicable to areas and processes that can be quantified and modelled. However, they do not see the added value, the art of healing, which can come from AI in the current state of the technology, as it cannot diagnose based on independent thoughts or atypical symptoms, which doctors can do based on their experience. It is also worth pointing out that it was not in their own field of expertise that they first mentioned the potential use of AI but rather in other fields, where they cited activities that could be automated. This phenomenon may be due to the fact that they consider their own specialization to be more complex and that they have much more information and experience in the field of their specialization.

Information at the cognitive level is the knowledge of the resources needed for the development since in order for the doctor to apply the technology, the institution needs to have resources to make it available. The doctors interviewed are aware that getting from the research phase to the application of AI in surgery is a very resource-intensive process. The risk of this realization is that they may move away from AI at the initial stage due to a lack of resources, with the consequence that they may be less likely to approach the technology with a positive attitude.

However, conative attitudes are not only shaped by the information they possess but also along an emotional, affective axis, wherefore I will present the emotional components in the following.

The affective level of attitudes is also influenced by doctors' previous experiences with AI in the context of digitalization. It should be noted that the majority of interviewed physicians consider that the information patients get about their illness online raises several problems. First of all, they mentioned that patients lack basic health knowledge and are not aware that atypical symptoms exist, thus misdiagnosing themselves. Lack of interpretative competence means that they are unable to distinguish between credible scientific and pseudoscientific content on the World Wide Web. These thoughts support the findings of Veszelszki and Falyuna (2019) in their study on pseudoscience, which argues that it is difficult for lay people to interpret and recognize authentic scientific content, partly as a consequence of the greater popularity of pseudoscientific content among ordinary people. The emotional attitudes of the interviewees suggest that paternalistic medicine is still a basic principle among them, but that the gap between doctor and patient is no longer one of information asymmetry but of interpretative competence, as patients are already in possession of information through web 2.0 but are not able to interpret it properly.

Affective Axis – The Doctor–Patient–AI Relationship from the Doctors' Perspective

In order to assess the direction and intensity of attitudes towards AI, interviewees described how they currently perceive doctor–patient communication and then reflected on how AI could change this. Both negative and positive possible changes in this area of questioning were included in the responses.

The negative change, according to the doctors, is the complacency and inattention that comes with the use of technology, which makes doctors less aware of the data and trust the machine to diagnose, which increases the possibility of error (for example, in atypical symptoms) and can reduce the knowledge and expertise of doctors when they are served by the machine. This finding not only demonstrates the relevance of the deprofessionalization phenomenon as described by Gaal (2016) but also extends the fear beyond the reduction of asymmetry in the doctor–patient relationship to the impact of AI on medical status.

The fact that the doctors interviewed believe that a robot will never be an equal participant in the doctor–patient relationship because the human body has a level of complexity that is difficult to determine from data, and thus AI can only ever be a proposer, overridden by medical expertise, indicates a negative attitude towards AI.

However, in addition to the above-mentioned opinions, some possibilities have been listed that point to a positive change. One such effect that the spread of AI could bring about is the ability to analyse existing knowledge and datasets. Human capacity to absorb information is finite, but AI can help them access more data, saving time in data collection. The issue of time and speed was identified as a key factor for the doctors in the study. Lack of time is the biggest barrier to doctor–patient communication (Sára et al., 2013: 4), so reducing this barrier could bring about a marked change in medicine. However, according to Imola Sándor and János Piling (2016), it is not enough to increase the amount of time, as doctors could spend hours talking to patients using medical terms, and they will still be in an asymmetric relationship. In fact, the solution lies in making efficient use of the time available.

To conclude the affective axis, I will highlight the interviewed doctors' thoughts on the medical role. They explained that medicine cannot be identified with the recognition and categorization of symptoms, as it is a much more complex process, a set of communicative interactions in the process of healing, in which the doctor is a key participant. These statements are in line with Mihály Bálint's (1990) philosophy of "medicine is the doctor himself", which I presented in previous chapters on the topic of medical authority.

After the cognitive and affective components, I will present the conative, i.e. the acting attitude, which in the present research can only be interrogated on a theoretical level since in many cases, even if doctors would like to use artificial

intelligence, they do not yet have the possibility to do so in everyday patient care since they do not possess such a tool.

Conative Axis – AI-Based Technology in Healthcare Practice

The fusion of affective and cognitive factors results in behaviour, in this case openness or actual use of AI. It is worth pointing out that when I asked doctors whether they use or would use AI in the future for medical treatment, they invariably listed other specialties where AI could be applied or even have a positive impact. This attitude, as I mentioned in the cognitive axis, may indicate that doctors feel less involved in other areas. Based on these statements, a self-protective function of this attitude can be identified, which has the effect of removing themselves from the use of technology that threatens medical authority.

For some doctors, however, an instrumental attitude function can also be observed. In this case, the goal orientation can be interpreted as an interest in innovation being rewarded in the profession, and thus an openness to it, but not yet to the extent of questioning one's own role as a doctor but rather to projecting the possibility of its use into other, less important areas. Doctor 3, for example, defined the diseases for which AI could and could not be used: "We have to distinguish between diseases that can be described very nicely, modelled and solved by a machine and those that cannot be modelled because they have atypical symptoms and require the synthesising power of a human being" (Doctor 3).

According to the attitudinal axes presented, it can be observed that on a cognitive level, the current limitations of technology are revealed, which, in addition to the resource requirements, lie in the understanding of the complexity of the human body. Along the affective axis, fears can also be identified in terms of past experiences (pseudoscientific content available on the Internet), the risk of becoming impoverished, and the need to maintain a paternalistic medical style. Positive effects of AI were also articulated by physicians, namely in terms of time constraints, which is one of the main communication barriers (Sára et al., 2013: 4). All these reflect, to a small extent, not only the attitudes of the interviewed physicians, due to the small number of items in the sample, but also the medical community through social embeddedness (Domonkosi, 2007). In the following, I will shed light on these collective attitudes.

Collective Attitude – The Issue of Responsibility in the Doctor–Patient–AI Relationship

When discussing the issue of AI, none of the physicians showed neutrality, which, in addition to confirming the relevance of the topic, suggests that the medical community feels addressed by the topic.

During the interview, I shared with the physicians a fictive case in which future medicine will use artificial intelligence to make diagnoses, and the physician, the patient, and the AI will be involved in making the diagnosis, but the AI will give an incorrect diagnosis. My question was about whose responsibility is the harmful consequence in this case. The doctors invariably identified the doctor as the responsible party, which points to the fact that the artificial intelligence is not recognized as an independent participant and decision maker in the process of treatment and diagnosis, but the doctor is. It was pointed out that if the technological development goes that far, it will be necessary to develop regulations for such cases, as in the case of GDPR, but it will always be the doctor who will be responsible for the patient. These parts of the interview reveal a sense of medical responsibility and the presence of a paternalistic decision-making style in the medical community, which is in line with the research findings of Málovics and colleagues (2009) that this decision-making model is most often used in Hungary.

Broadening the scope of the stakeholders, I also asked for the views of the profession as a whole. Doctors separated young doctors from older ones and described the attitudes of these two age groups differently. According to them, the younger generation is more adaptable and interested in new technologies, while older colleagues find it difficult to rethink practices and processes that have been tried and tested over decades. Doctor 3 says the following in this regard:

> Young people are very open-minded, and older people are becoming more closed in their discipline, so it will be difficult in their case. They find that they have to relearn everything that is new. The routine and the profession, which is already in their pockets, makes it difficult for them to say that they will now take on extra knowledge because extra knowledge requires extra energy. (Doctor 3)

According to Győrffy (2019), the use of artificial intelligence will become part of everyday medicine in developed countries in the next ten years, so doctors will need to acquire new types of knowledge to use these tools, and medical education and training will need to catch up. How do the doctors we interviewed see themselves, the patients, and AI in this new relationship? Using photo collage techniques, I explore the relationality of this triple relationship.

9.2. Presentation of the Results of the Photo Collage Technique

As a complementary method to the semi-structured interviews, I used the photo collage technique with the interviewees. The aim of using this technique was to

gain insight into the doctor–patient–AI relationship using this alternative research method. By stepping out of the formal question–answer structure, it was also possible for the doctors to express their attitudes towards this complex issue through collage making.

Summarizing the attitudes revealed by the collages, it can be concluded that physicians do not identify AI as a participant in its own right but as a facilitating tool. A common finding of physicians based on the collages is that the lack of sensitivity and the psychic impact of peer relationships cannot be replicated by an AI-based technology.

The use of AI is not seen as a way to communicate with patients but rather as a technology to provide data and possible solutions for doctors. Of course, there may be shifts in this, but the extent of these shifts depends on the specialism of the respondents, and the physician's decision is always treated as the highest level, as the responsibility (as they understand it) is also theirs.

However, the issue of responsibility is more nuanced in the minds of medical students whose attitudes I measured using a questionnaire. In the following, I will present the views of future doctors on artificial intelligence.

9.3. Analysis of the Questionnaire Results

The questionnaire revealed that the attitudes of medical students and residents towards AI are rather negative, which may be due to the self-protective function of the attitude because they are concerned about the presence of AI threatening medical authority. They also insist on the practice of paternalistic-style decision making when it comes to its use in diagnostics, trusting more in empirical medical knowledge than in an AI-based technology. However, it is worth highlighting that they are positive about the use of AI, seeing it as useful for reducing time pressure and evaluating large datasets. Diagnostics and the pharmaceutical industry are identified as potential areas for development, and private institutions are seen as the first to have a chance of using the technology in practice, with resources as a backdrop. The risk is therefore that many institutions will be unable to afford the high price or will put other things at the top of the list of priorities for development and that doctors will be isolated from the technology or will exclude themselves from it because they are convinced that there is no budget for it. A further concern about AI is that it is not flexible enough, does not treat patients in a sufficiently individualized way, and does not recognize unusual symptom complexes. As for the sense of responsibility among medical students and residents, it can be concluded that the paternalistic style is less likely to hold in terms of responsibility, as that would already be shared with AI by the doctors of the future.

10. Conclusions

My research is exploratory, and to explore the topic more widely, it is necessary to broaden the range of respondents. In addition to doctors, medical students, and residents, an attitudinal research of other actors in the healthcare system could complement the research. I am also planning to study doctors in specific specialties (e.g. pathology, gynaecology), which would also help to identify differences between specialties. My analysis could form the basis for the creation of a doctor–patient–AI communication model.

According to Meskó (2020), AI technology can become part of medical practice if the distance between developers and users is shortened. To this end, the role of AI in healthcare communication is a priority issue, just as the attitudes of users, i.e. healthcare workers. The healthcare actors interviewed in my research express concerns about the potential of AI use, which could initiate a dialogue between developers and users and point the way to future developments.

I also plan to further investigate the attitudes of other actors involved in health communication, such as patients, nurses, and facility managers on this topic. I also find it a worthwhile area of research to learn about the attitudes of the stakeholders in order to gain insight into the attitudes of the developers so as to build a more comprehensive picture and to initiate a possible collaborative development process between the stakeholders.

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RESEARCH NOTES

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The Third Mission of Central-Eastern European Regional Universities: Two Cases from Romania and Hungary

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Abstract. The presented research investigates the case of non-metropolitan, regional universities in Central-Eastern Europe to understand how their third mission strategy and practice contribute to the societal development of their localities. It intends to fill a gap in related contemporary research, which usually neglects such universities in this part of the EHEA. The investigation is built on a comparative case study design with non-random, purposive sampling on the cases of *Universitatea Transylvania din Braşov* (UTBv) in Braşov, Romania, and *Dunaújvárosi Egyetem* (DUE) in Dunaújváros, Hungary, and employs a mixed methodology of the convergent parallel design (parallel databases). The paper presents an outline of a doctoral research plan with an overview of its preliminary results, the author's related publications, the present state of the research, and its possible future directions.

Keywords: Central-Eastern Europe, regional universities, university third mission, comparative case study

1. Introduction

University[1] third mission (Compagnucci–Spigarelli, 2020) has been expanding and diversifying at an accelerated rate for some decades now (Benneworth et al., 2018; Frondizi et al., 2019; Farnell, 2020; Compagnucci–Spigarelli, 2020) as a result of various pressures on higher education institutions. Recently, the local variations of the 21st-century "grand challenges" and UNESCO's Sustainable Development Goals on the international level (Trencher et al., 2014; Farnell, 2020), the substantial changes in national higher education policies (e.g. governance and funding model change), and the evolving expectations of a widening circle of university

1 In this paper, we use the terms *university* and *higher education institution* as synonyms meaning any kind of tertiary education providers.

stakeholders on the regional and local levels (Jongbloed et al., 2008; Carayannis et al., 2018; Goddard, 2018; Farnell, 2020) constitute a mix of external expectations that academic communities need to meet somehow. Reactive, proactive, or even pre-active ways of answering these challenges depend on a vast array of factors, many of which relate to the position of the higher education institution in its local-regional environment (Goddard, 2018; Kempton, 2019; Tijssen et al., 2021). This can be detected in the embeddedness of the university in the intricate societal network of its city and region (Jongbloed, et al. 2008; Goddard, 2018; Benneworth et al., 2018) or in what role it plays via its three missions in such subsequent regional policy concepts of the *learning region* (e.g. Kozma et al., 2015), the *quadruple and quintuple helix models* (e.g. Carayannis et al., 2018), the *regional innovation ecosystem* (e.g. Reichert, 2019; Tödtling et al., 2021; Tijssen et al., 2021), the *Smart City* (e.g. Farnell, 2020), or in the solution of local sustainability issues (Trencher et al., 2014; Compagnucci–Spigarelli, 2021).

Indeed, there has been widespread research on the contribution of European higher education institutions to the complex societal (economic, social, cultural, environmental, etc.) development of their localities and regions (most recently: Reichert, 2019; Maassen et al., 2019; Goldstein et al., 2019; Tödtling et al., 2021; Tijssen et al., 2021). However, they have mainly focused on metropolitan institutions and selected only a few Central-Eastern European cases into their samples. Thus, it seems to be worth conducting further research into the case of non-metropolitan, regional universities in Central-Eastern Europe to understand how their third mission strategy and practice contribute to the societal development of their localities.

Especially as on the higher education map of the EHEA, this macro-region stands out as uniquely positioned: its Humboldtian traditions and the Soviet influence on its national higher education systems inform not only the post-1990 neoliberal turns of governance but also the various challenges of its 21st-century present (Pukánszky–Németh, 1996; Polónyi, 2008; Kozma, 2012; Kwiek, 2012; Kováts–Temesi, 2018). For some higher education institutions, this historical background is further enriched by the special municipal heritage of communist economic and social policy: they are located in past *Stalin Towns* (Baranyai, 2016; European Commission, 2016). Therefore, they may be interesting cases for demonstrating how universities based in Central-Eastern European regional industrial cities help tackling the present societal challenges of their localities via their third mission practices. We have chosen two such institutions, *Universitatea Transylvania din Braşov* (UTBv) in Braşov, Romania, and *Dunaújvárosi Egyetem* (DUE) in Dunaújváros, Hungary.

Furthermore, this research problem needs a wider scope of investigation to include not only the major political and economic stakeholders of the selected cases but also the rich variety of their other societal partners (Benneworth et al., 2018). Thus, our

research could strengthen that stream in the literature which understands university third mission as one including community engagement (e.g. Benneworth et al., 2018; Maassen et al., 2019; Farnell, 2020) as opposed to the still dominant viewpoint of the *third mission* referring only to the technology and knowledge transfer collaborations of a university with its industrial partners (Compagnucci–Spigarelli, 2020).

2. The Third Mission of Higher Education Institutions

The concept of the *third mission* was born in the late 1980s (Clark, 1998) and has been gradually expanding since then. Especially in the aftermath of the 2008 global financial and economic crisis (Benneworth et al., 2018; Tijssen et al., 2021), since when the range and kind of such activities, the variety and degree of involvement of its participants, and the institutional changes it brings have diversified. From problem-solving applied research with contracted industrial partners (Clark, 1998), it has developed into a rich variety of institutionalized knowledge transfer activities with university's multilevel societal partners, among them the stabilization of its independent, patent-based income-generating practice. Moreover, as a result of the expansion of the knowledge economy and society, the range of university stakeholders has also been extended to include not only its local, regional, national, and international political and economic, then cultural, educational, and civic partners but also the natural environment and its sustainability. This is often described as the expansion of the knowledge triangle of the triple helix model (Etzkowitz–Leydesdorff, 1997; Leydesdorff, 2013) to the quadruple helix and the quintuple helix models (Carayannis–Campbell, 2012; Trencher et al., 2014; Carayannis et al., 2018).

Several systematic literature analyses have investigated the expansion of the understanding of the third mission, for example, Frondizi et al. (2019) and Compagnucci and Spigarelli (2020), but they all confirm that there is still no single, comprehensive, and widely accepted definition for the phenomenon. This is partly due to its complexity of intentions, activities, collaborative partners, and context, partly to the fact that such university practices are in constant movement as a result of the dynamics of actual stakeholder needs, the dialogue between the actors, and the changes in the external environment of the collaborations. Also, every university's third mission portfolio is unique, as the realization of such practices strongly depends on the institution's embeddedness into the social network of its geographically relevant area (e.g. city, region, country), the level of institutionalization of the third mission activities, and the available resources on all sides.

Therefore, it is necessary to put forward our understanding of the term that informs our research. Having reviewed some of the most relevant literature, we use a wide interpretation of university third mission. For us, it refers to all those activities that universities plan, execute, assess, and develop together with their stakeholders from

the political, economic, social, educational, cultural, and civic environment on the local, regional, national, and international levels along the academic functions of teaching and learning, research, and community engagement. The activities spring from some actual need or possibility, and the resulting practices mutually benefit the actors, even if in a different way (Benneworth et al., 2018).

Such collaborations may directly or indirectly serve the growth of the economic competitiveness of their local, regional, national, or international environment, enhance its social development, preserve its cultural values, improve the quality of life of its inhabitants, and promote the sustainability of the natural environment. The third mission is realized in different forms and ways in the various scientific disciplines (Benneworth et al., 2018), which constitutes a versatile and shifting range of activities with "a wide range of motivations" (Hrubos, 2013: 36). The partnerships and collaborations on the different territorial levels may also extend to other higher education institutions (Pusztai et al., 2012; Hrubos, 2013).

3. The Aim of the Research

Inspired by a recent EUA study (Reichert, 2019), its follow-up research into the regional innovation impact of European universities (Tijssen et al., 2021) and Zoltán Gál's work (2013, 2016; Gál–Páger, 2017; Gál–Ptáček, 2019), the aim of our research is to explore and assess what role UTBv and DUE play via their third mission strategy and practice in the societal development of their cities and regions as based on the needs of their external stakeholders in the quadruple helix model. Thus, partnerships, expectations and offers, the variety of collaborations, the supporting factors and barriers, the realized benefits and future plans will be explored on both the university and the stakeholder sides. Then, by a critical comparison of the experiences of the two universities, similarities and differences will be highlighted, good practices will be offered, and the common features of their third mission practice will be related to the relevant literature on Central-Eastern European regional universities' contribution to regional development (e.g. Bowen et al., 2010; Gál, 2013, Gál–Páger, 2017; Gál–Ptáček, 2019).

Therefore, our main research question is: How do UTBv and DUE contribute to the societal development of their city and region? To investigate it in detail, we set up three groups of research questions: one for the institutions, one for the stakeholders, and one set for comparison.

Research questions for the two universities:

1. What local-regional external stakeholder expectations and needs has the university faced? Which ones have been relevant for its educational profile and capacities?

2. How has it answered these needs as part of its third mission strategy and practice? (collaborations with external stakeholders and their results)
3. What benefits have these collaborations brought to the university?
4. What factors have the collaborations promoted?
5. What difficulties and barriers has the university faced in the collaborations?
6. How would the university develop its external collaborations in the future?

Research questions for the stakeholders:
1. How did their partnership with the university start?
2. What were the areas of their collaborations with the university and what are their major results?
3. What benefits have the stakeholders realized from these collaborations?
4. What factors have the collaborations promoted?
5. What factors have the collaborations hindered?
6. How would they develop their partnership and collaborations with the university? (future needs)

Research questions for comparison:
1. What similarities are there between the two universities in RQ 1–6?
2. What differences are there between the two universities in RQ 1–6?
3. How have these universities contributed to the complex societal problems of their localities?
4. What seem to be common Central-Eastern European features of regional universities' contribution to the development of their city and region?

4. Methodology

The research is built on a comparative case study design of two institutional cases based on a non-random, purposive sampling. The selection criteria are the similarities of the two universities. They are both located in a non-metropolitan region of their countries with an Emergent Innovator status by RIS 2021 (EC 2021). They are the only higher education institutions in their region, have a similar educational profile (UTBv's offers include the educational fields of DUE), and share a similar historical origin (foundation in the Communist period). However, there are considerable differences between the two in terms of their region's stage of development (Regional Competitiveness Index 2019 for RO12 (Centru): 13.18, for HU21 (Közép-Dunántúl): 40,57, Annoni–Dijkstra, 2019) and in terms of their type and size: UTBv is a comprehensive university with a strong research profile and over 20,000 students in 2021 (Transylvania University of Braşov 2021), while DUE is a specialized university of applied sciences with less than 2,000 students

(DUE 2022). This warrants the careful analysis and comparison of our research results along the various dimensions of the enquiry (Farnell–Šćukanec, 2018; Farnell, 2020; Tijssen et al., 2021).

We employ a mixed methodology of the convergent parallel design (parallel databases) (Király et al., 2014). On the one hand, we apply non-reactive and quantitative measures, namely qualitative content analysis, on the integrated regional development strategies of the two cities, on the websites and available institutional documents of the two universities, and on the institution's UASiMAP Self-Assessment Report (DUE, UTBv). This will be complemented by a secondary analysis of relevant official statistical data (Eurostat, KSH, INS, Erdélystat, RCI 2019, RIS 2021) to triangulate our qualitative data. On the other hand, we use qualitative measures, namely semi-structured interviews with university senior management, key people, and the representatives of as many external stakeholder groups of the two universities as we can to cover the widest range possible.

As for our definitions, we have already stated our understanding of the *third mission*. Here we only mention another term, *region*, which we interpret as a city and its immediate surroundings in a 50-km radius (Tijssen et al., 2021).

5. Preliminary Results

We have published nine papers and compiled a yet unpublished report for the EURASHE UASiMAP project as a piloting institution (UASiMAP Self-Assessment Report: DUE, 2021) in connection with the present research. Three theoretical papers discuss the phenomenon of university third mission as presented in the European and Hungarian literature (Sitku, 2019b), its relation to university social responsibility (Balázs et al., 2021) and to service learning and social innovation (Sitku, 2021c). An institutional self-assessment tool for a widely interpreted community engagement, the TEFCE Toolbox (Farnell et al., 2020), has also been analysed in terms of its potentials for building a learning community of the assessing university–stakeholder team (Sitku, 2022).

The other six works are research papers on various aspects of the third mission practice of the University of Dunaújváros or the available European assessment tools for university third mission. They explore the range of third mission collaborations (Sitku, 2019a; Balázs et al., 2021), their results and limitations (Sitku, 2019a; Sitku, 2023b [forthcoming]) and analyse the university–municipality partnership along the research questions presented above (Sitku, 2021a). Students' experience with participating in the university's third mission events has also been investigated (Sitku, 2020), of which find there is a summary below. Moreover, the possibilities of introducing the methodology of service learning to certain courses at the Institute of Social Sciences have been explored, as it is the major manifestation of the third

mission in the teaching and learning function of a university (Sitku, 2021b). Finally, an analytical paper is under publication, which takes the university management's viewpoint on choosing between the institutional self-assessment tools presently available in the EHEA for a developmental evaluation of their existing strategies and practices in the field of the third mission (Sitku, 2023a [forthcoming]). Our research data on the rest of DUE's stakeholders and on UTBv's institutional data are still being processed for the dissertation.

To zoom in on an important aspect of our research, the realized benefits of university–external stakeholder collaborations, let us now present the student side of the third mission practice of the University of Dunaújváros (Sitku, 2020). We conducted a qualitative research based on structured face-to-face or online interviews with students who had joined in the organization and execution of the various activities, temporary or recurring, relating to the third mission of the university between January 2016 and April 2019.[2] Among others, we asked the question as to what added values they gained by participating in the realization of the various annual and occasional events. The rationale was the position of third mission activities being considered extra-curricular activities, which may result in various cognitive, social, and affective learning outcomes, and thus increase student satisfaction and retention (Duque, 2014). Our research results provide an insight into the fieldwork and actual impact of university community engagement activities on the participating students.

Students typically get involved with the activities due to their membership in the Students' Union or their internship at the Communication Office. The range of tasks in the organization and execution of the events include brainstorming, the sourcing of necessary materials, decoration creation, venue preparation, marketing, hosting the events, orientation, giving short presentations, distributing marketing material, liaising with partners of the university, charity work, postproduction works on media material, etc. Those participating in the recruitment campaign of the university even receive a two-day sales training and are involved in various thematic groups addressing and orienting visitors, operating the promotional tools, and documenting the events.

Among the motivations for involvement, most students hope for the increase of their social and relational capital, a job opportunity, the emotional gratification of working in a team, self-realization, or have altruistic feelings. Their work's

2 Researchers' Night (every September), Science Week (every November), Santa Claus visiting the university kindergarten (every December), "Jószolgálati Karácsony" (December), fundraising (twice a year), blood donation (twice a year), open sports programmes (several times a year), roadshows of the Recruitment Campaign (several times a year), Open Days (November–February), DUDIK Festival (June), DUE conferences (several times a year), OTDK 2017 (April), TDK and Talent Day (November and May), ISZC Project event (several times a year), MaTech Competition 2018, 2019 (April), Week of Electromobility, 2018 (September), Freshmen's Camp and Freshmen's Ball (every year).

possible contribution to their individual academic aims is less of a motivating factor. Accordingly, expected benefits of the participation focus on gaining work experience and developing workplace skills, self-realization, earning money, and taking part in social activities, while advantages in their studies are not expected. As for the realization of the benefits, students report the improvement of their communication, time management and "employee skills", as well as the ability to handle people and difficult work situations. Their emotional and altruistic needs are also met; they gain practical experience supporting their theoretical studies, earn some money, and increase their personal prestige on campus.

As for added values, students highlight the growth of their social capital and the sense of belonging to a small community, values relating to personality development and the gratification of emotional motivations. The connection between the achieved benefits and their academic studies is rather less characteristic, though. According to the majority, there is no correlation between the participation in the organization and the execution of university third mission activities and students' study aims, i.e. their academic studies on a given programme.

Students also provide negative experiences: the frequent disinterest and passivity of their fellow students, the difficulty of finding "the right person for the job", and the agreement on a mutually convenient time for the tasks. Furthermore, the explanation of their participation in the events for the missed lessons on their courses is not acceptable for some teachers, and students feel that "what is everybody's business is nobody's business". Furthermore, low public interest in the events and missing empowerment in the recruitment campaign also have a disheartening effect, yet they report an overall intention for future participation.

We also invited students' suggestions for the improvement of the third mission activities. They advised the expansion of the range and number of activities and to make them more open and involve "external students". The scheduling of the events and the internal communication of the university are two areas for improvement. They would emphasize "the right marketing that can raise people's attention", would follow the trends more and harmonize the "CSR activities" of the university. The financial aspect of the activities should be strengthened; they would improve their work–life balance and would like to spend sufficient time on their studies.

From the perspective of the institution, many of the discouraging factors in the way of the sustainability of third mission activities may be overcome or may at least be alleviated by involving university students into their realization. Low HR resources, fluctuating financing, lack of time, the need for institutionalization, and the embedding of these activities into university strategies (Gál, 2016; Reisinger–Dános, 2015; Sitku, 2019a) may be fully or partly solved by students' well-planned and directed participation.

However, we consider it a shortcoming that DUE's third mission activities have not been planned along deliberate student learning outcomes. Hence, we suggest their reconsideration along the dimensions of professional knowledge, skills, affective learning outcomes, autonomy, and responsibility and then their linking to the relevant theoretical and practical courses. It is also worth emphasizing in what terms these activities and students' long-term participation might increase future student employability. Although they only mentioned a few professional skills, students had developed several "employee soft skills" such as team work, taking responsibility, time management, communication skills, and conflict management. These are such added values that are worth conscious development by the institution and that may also contribute to the popularization of the educational offer and colourful campus life of the university.

6. Conclusions

We started our doctoral research in the autumn of 2018 with the finalization of the research plan in the spring of 2020. Over the years, we have conducted an extended literature review and some smaller, related research (as presented earlier), which enrich the main pathway of the doctoral research. We have analysed the subsequent institutional strategies of DUE (2016, 2021, 2022) together with various other internal documents, as well as the integrated urban development strategies of Dunaújváros (2016–2020) (Sitku, 2021a). As for the third mission practice of DUE and its assessment, we have conducted 26 interviews with 22 senior managements, university key people, and available external partners. This dataset has been complemented by the collection of related institutional data and a self-assessment when piloting EURASHE's UASiMAP Self-Reflection Tool and Self-Assessment Report in 2022. The secondary data and the UASiMAP SRT and SAR are ready for further analysis; however, some of the interviews are yet to be processed.

As for Universitatea Transylvania din Braşov, our cooperation on the present research started in late 2020 and has been quite successful. We have collected the major institutional and municipal documents related to the university's present third mission strategy and practice, and some further institutional data are on the way. In terms of empirical data collection, nine interviews have been conducted with various vice-rectors and key people at the university and some of their major external partners (county council, municipality, businesses, cultural organization), which a recent visit to the university has completed. The interviews have all been analysed to be followed by the assessment of the secondary data.

Possible future directions of this research include impact studies on universities' community engagement activities to detect their direct and indirect results and effectiveness on their environment (Tijssen et al., 2021). It is also important to

investigate how they contribute to the solution of local sustainability challenges, and what innovation, especially social innovation, they make possible in the relevant communities (Kozma, 2017, 2019; Kozma–Márkus, 2019). Finally, the recent Hungarian university governance and financial model change might warrant changes in the third mission strategy and practice of universities – what might be their impact on the institution and its stakeholder environment?

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Pandemic and Infodemic – Which One Is More Dangerous?

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Abstract. This article examines the relationship between social sustainability and the fake news phenomenon in the light of the COVID-19 epidemic. Using existing statistical data and relevant media-related concepts, it compares the harmful impacts of the pandemic and the accompanying infodemic. The problem can be placed among the components of hybrid warfare. Examples, statistics, and research on COVID-19-related fake news are discussed with a focus on efforts for building resilience against fake news.

Keywords: pandemic, infodemic, fake news, social sustainability, COVID-19

1. Introduction

The COVID-19 epidemic, which started at the end of 2019, had a significant impact on the media in several aspects. The sense of emergency and threat has led the public to increased media consumption, the signs of which were already visible in international research on the subject in early 2020. Data from the Reuters Institute's 2020 survey showed that subscriptions have increased in the United States, meaning that people were willing to pay for quality news, according to the two-day MASCOM (Media and Communication Online Conference) online conference on 30–31 October 2020. The focus was on the impact of the global pandemic on communication, in which Prof. John V. Pavlik (Rutgers State University of New Jersey, USA) gave a plenary lecture on the future of journalism (Pavlik, 2022). This was supported by a joint study by the Digital Audience Measurement Council (DKT) and Gemius, which measured an increase of almost 90 percent in page views for news sites in Hungary (Media1, 2020a). In addition, according to data from Nielsen Public Audience Survey, the per capita time spent watching TV in Hungary was 4 hours 56 minutes on week 10 but increased to 5 hours 48 minutes per day on week 13. This means that on average Hungarians spent nearly 1 hour more watching TV than before the state of emergency was declared (Media1, 2020b). The intense

interest in the virus and the heightened news consumption made it clear in no time at all that news about the epidemic had enormous value in a resource-poor environment of the attention economy. According to Eurostat data for 2022, nearly 9 out of 10 EU citizens aged 16–74 used the Internet at least once in 3 months in 2021. In that period, 87% of the Hungarian population read online news sites. This puts Hungary in the lead. The biggest problem, however, was that the first to react to this were also sites not named by the Cybercrime Department of the National Bureau of Investigation of the Police Service of the Office of the Emergency Police for various reasons (e.g. political influence, disinformation, maximizing revenue from online advertising) but that in any case are interested in attracting the attention of the largest possible audience, even at the cost of manipulating public opinion with distorted, incorrect, or outright falsified information. The police found that the dozens of "fake portals" and their associated Facebook pages were part of the same network, where articles were shared on topics of current public interest but based on untrue allegations.

The primary aim of this paper is to explore the fake news phenomenon that has been unfolding in relation to COVID-19. What are the dangers of this process in terms of social sustainability and the disintegration of the social fabric? A holistic approach to the topic is necessary, and my research area, the communication of warfare, especially fake news as one of its possible tools, is one part of this approach. There have been numerous examples of misuse of COVID-19-related fake news in our country, and there are also a number of international precedents that suggest that there have been serious "fake news factories" in the interpretation of COVID-19. In my study, I investigate the possible motivations behind the intentional dissemination of fake news, the possible side effects of this phenomenon, and the possibilities and tools for protection and resilience.

The COVID-19 virus infection is a crisis that cannot be addressed without thinking on a global scale. It is a global epidemic that should have been dealt with by different countries working together and joining forces, not competing against each other (EU Council, 2022). The high interdependence that existed between different countries, continents or even alliances of countries, sometimes led to a looser, sometimes to a closer level of cooperation. There was no single solution. In the case of the European Union, each country initially tried to manage its own supply and production chains, i.e. the economy or healthcare issues. It was only later that cooperation between countries and joint actions in a few areas were organized. (At the time of writing, the Russian–Ukrainian conflict is also a recent example of this, with the same effects.) The coronavirus epidemic is not just a health epidemic, it is a crisis of raw materials and commodities that affects all countries globally and all people interdependently, so an adequate response is unthinkable without a united front. All these factors have created a new challenge for the world economy and an opportunity for the promotion of different political narratives.

I look at the possible content of sustainable development, analysing possible definitions by other researchers. In this way, one can see how diverse its interpretation is and how many areas it covers. Then the history of "infodemic" as a newly coined term is summarized and illustrated with related examples. The phenomenon is placed within the framework of hybrid warfare. The importance of fake news is underscored as a means of attack, of which examples are given. Finally, domestic and international cases of the use of fake news are presented.

2. Theoretical Approach

2.1. Sustainable Development

When we look at the connection between social sustainability and digital life, we find highly complex phenomena that are all interconnected such as climate change, pollution, hazardous chemicals, air, water, and soil pollution, or conservation of marine resources. The protection of wildlife is also essential, including stopping the illegal poaching and smuggling of protected species and managing the demand and supply of illegal wildlife products (Gombos–Sziebig, 2021). Infections due to disruption of the natural order of wildlife can be of any kind, but especially bacterial and viral infections in poorer countries and regions and their reduction should be a priority. In parallel, increased attention is also needed to protect human health from the effects of micro-particulate matter, which can have impacts on marine life, among other things, and play a key role in the safety of wildlife. The declaration of the right to a healthy environment can be linked to the Council of Europe, in particular to the 1993 Lugano Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment, which states that "the environment includes natural resources both abiotic and biotic, such as air, water, soil, fauna and flora and the interaction between the same factors" (Hermann, 2016).

This also shows how important it is for us to work on research in clean energy and to protect the legal and moral foundations. In addition to paying attention to the environment and to sustainability, to human life itself, we can also talk about a kind of extension of legal and moral principles in general because that is part of this phenomenon. The development of competences and awareness raising among people in the context of global digitalization should be emphasized. Because of the parallel narratives, the commonly agreed social norms are constantly evolving and disintegrating, also in terms of environmental thinking, and so the debate on sustainable development is fragmenting, and people do not have the same understanding of certain theories and practices (Ellis, 2009).

There is also a shift in the sociological balance, both in terms of population and society, due to demographic factors that show either ageing or overpopulation,

so in one situation there is a large number of older people supported by a disproportionately smaller number of active and young workers (Eurostat, 2021), while in the other there is a majority of young people and a small number of older people (WHO, 2021). Political polarization is also an important factor, where different political narratives compete in a given society over the interpretation of certain issues (economy, culture, protection of the environment, etc.).

All of this has an impact on the scientific discourse, which may cease to exist or become extreme, thus eliminating discussions based on quantitative and qualitative research. It is by exploiting this that a significant part of fake news can be traced back to the competition between the narratives of a particular interest group based on pseudo-scientific material and misleading news. Hence the formation of opinion bubbles, which are fuelled by social media, encourage personal convictions, and on that basis the formation of camps of people with the same narrative, where almost everyone speaks with their own camp, appeals specifically to human feelings, whether they are political, national, or religious (Lovászi, 2017).

All this increases the modern welfare social disintegration. Therefore, sustainable development, based on dialogue and scientific debate, which then requires joint political action, cannot be handled jointly by different countries or coalitions of countries. If, for example, the United States and China, the two global leaders, or the G7, G8, or G20 countries, do not agree on certain environmental issues, then a unified solution cannot be achieved, which affects almost all countries. In summary, the challenge for everyone on the issue of sustainable development is to tackle fake news and to defend against it in order to collaborate.

2.2. Infodemic

At this point, it is important to mention the term "infodemic", coined by David Rothkopf, a US political analyst for the Washington Post, in 2003, during the SARS virus outbreak, by combining the words information and epidemic – a reference to the fact that our communication processes can act like a virus.

According to Rothkopf (2003): "A few facts, mixed with fear, speculation and rumor, amplified and relayed swiftly worldwide by modern information technologies, have affected national and international economies, politics and even security in ways that are utterly disproportionate with the root realities." Nowadays, it is not just a question of "media influence", as the news flow of Internet sites and mass media, among other things, is merged in a complex way with the informal flow of mobile phone conversations, text messages, and e-mails, in which real facts, false rumours, interpretations, and propaganda are mixed in an opaque way (Karvalics 2021).

This process has also been joined by governments that have developed many one-sided and misleading information practices not only in the information race against each other but also within their own political communities.

This may be due to economic interests on the one hand and to efforts to undermine political authority or the position taken by the major powers on the spread of the COVID-19 in the context of the pandemic on the other. The communication fracture between the US–EU and China–Russia allies, linked to the different narratives, was evident in the way they offered different explanations for the emergence of COVID-19. According to China, COVID-19 is a virus developed by the United States of America and spread to destabilize China; the US narrative, on the other hand, was that China was experimenting with the virus, which was released, and they tried to conceal it. In so doing, they shifted the blame for the global economic problems onto China. The more cautious EU leaders have tended to take the view that it is not possible to know exactly what happened but that a commission of inquiry should be set up to investigate the events in great detail. So, the fact that certain communication processes can spread like viruses is very much part of modern society. This has only been fuelled by the COVID-19 virus, which has created economic challenges. A social example of this is the sharing of specific content by ordinary people in their use of the media, outside of political will. When they distribute an article, a video or a meme – sticking to the topic of COVID-19 –, they can express their fear, their uncertainty, or even their up-to-datedness to their immediate or wider environment, thinking that they are serving and informing the community.

Looking at the phenomenon of COVID-19, if uncertain, incorrect, or deliberately false news content is distributed, it can create uncertainty in the society (e.g.: What are the side-effects of the vaccine? What does the vaccine even contain?). This can reduce vaccination coverage and thus protection against the virus. But there has also been a significant number of the population even questioning the existence of the virus. And in the absence of clear answers to this, backed up by scientific facts and credible individuals, there will be less willingness to get vaccinated (WHO, 2020). This, however, hinders the return to the community, postpones the use of the mask in time and space, and it can also affect economic processes, as if not vaccinated, the person cannot get a job.

Fake news, in this case false or only partially true statements about COVID-19, undermine the phenomena and facts stated and investigated by experts, making the population more inclined to question the knowledge of the real professional, while less scientific but more widely heard/seen/accessed content may be more significant and better perceived.

This process is dividing society significantly since it can lead to a more limited, restricted, and even false state in terms of information. As a result, it makes it more difficult to reach a common dialogue and debate, and the optimal solution for most people is pushed further away. Healthcare workload is also an important part of the phenomenon, as statistics show that the higher the vaccination coverage, the lower the hospital load and the lower the number of illnesses developed (Ellyat, 2021).

This is not to say that there were no hospitalized people in the more vaccinated areas but rather that the fewer people who were vaccinated created a greater challenge of healthcare, which in turn could lead to a health crisis in the worst case, as many people were put on waiting lists for treatments due to COVID-19, including those with very serious illnesses (Lovas, 2020).

> According to the Hungarian National Health Insurance Fund Manager (in Hungarian: NEAK), people waiting for surgery in 2022 cannot expect less waiting times than before the epidemic, and the situation may have even got worse compared to 2020 and 2021. […] In cases of hip and knee replacements, spine surgery, orthopaedic surgery, hernia surgery, thyroid surgery, for example, we can see that the waiting lists have grown significantly in a year (NEAK, 2022). In terms of the number of waiting patients, the picture varies, but, for example, there are almost 7,600 more patients waiting for cataract surgery, or 80 percent more than a year earlier. (Koós, 2022)

Infodemic is characterized by the fact that those on one side of the narrative support and promote a particular view, while those on the other side present the complete or partial opposite as an example, with the adverse effects of creating a crisis situation, political isolation, and mistrust in society.

This is what also happened in Hungary, where the "anti-virus right", "the anti-vaccine left", and the "pro-vaccine government" have been using different narratives and conflicting explanations and have made the population more divided, suspicious, and distrustful of each other. The political closure was also noticeable at the level of the European Union and the United States of America, as each country or state dealt with the situation in different ways and at different speeds.

2.3. Hybrid Warfare

According to Sun Tzu: "Supreme excellence consists in breaking the enemy's resistance without fighting." One of the world's greatest strategists made this statement in recognition of the importance of indirect warfare. And in the present case, this statement proves to be true in relation to disinformation, which can serve as a truly valuable tool, for example, to win a war without war, by spreading fake news. Sun Tzu's interpretation is that one of the most effective means of bringing the enemy to his knees without fighting is indirect warfare since this is the only way to destabilize the enemy's hinterland. Political and military actors have used the tools of influence in the past, but cyberspace has added a new dimension to their application (Aro, 2016). The media is an important player in hybrid warfare, which is becoming a battlefield as fake news spread. Research on fake news on

social media and in society has provided media science and military science with tools to detect the triggers and identify or even neutralize the harmful effects of fake news on public opinion. In addition to online space and social media, hybrid warfare also includes cyber-attacks, in which case multiple servers are attacking major public or private companies, paralysing their systems and even severely overwhelming telecom networks, power and utility grids. Fake news phishing is also part of the phenomenon, which can cause damage to major infrastructures, and hybrid warfare has become an essential part of political pressure.

2.4. Fake News

Fake news is a rapidly spreading content, which is why some of the content analysis and disinformation operations are also gaining in importance, as so-called troll groups share large amounts of fake news that are not real or are largely unrealistic but can reach a massive audience. In practice, this means that they can influence large numbers of people. There are also bot and robot software, which share a lot of content using tools that are more or less suitable for human interpretation. Fake news and fake videos pose a huge challenge to modern media and society at all times.

Fake videos fall into the category of deepfake. In these cases, artificial intelligence is manipulating a person's features (usually images or video, but also sound) to make them look like someone else.

News and information without any truth can spread in the media in a heartbeat. It is a difficult task to refute and counter these, and as a consequence, the examination and analysis of the implicit and hidden content of verbal and visual texts become more crucial. As social media provides a cost-effective and fast communication platform for reaching a broader audience, the disinformation operations on social media use three main tools: the aforementioned troll groups for commenting, bot (robot) software for sending automated messages, and fake news (Aro, 2016).

Fake News about COVID-19

The nature of fake news is to spread short, concise, to-the-point, and easy-to-understand messages. The following are examples of this:

– COVID-19 is a biological weapon that is alternately used by China, the United States, the United Kingdom, or even Russia (to destroy the EU and the NATO).
– COVID-19 did not break out in Wuhan, China – the US is hiding its true origin, which is in fact from US or US-owned laboratories (Gan, 2021).
– The outbreak is caused by migrants, and they are spreading the virus within the EU.
– COVID-19 is linked to 5G (e.g. Wuhan as a 5G testing ground).
– The EU has failed to deal with the crisis.

– Schengen no longer exists – Europeans are quarantined but migrants are free to move.
– COVID-19 is fake news; it does not exist.
– The EU can force mass vaccinations.
– About drugs, it is claimed that there are natural treatments to cure the virus, often combined with anti-vaccine narratives (Portfolio, 2021).

As can be seen, they meet the criteria described above.

2.5. The Institutional Framework against Fake News

Despite the fact that fake news has started to become a more serious novel threat only in recent years, with the expansion of the media, there are already institutional efforts to control it. The National Security Strategy, paragraph 68 states:

> The number, variety, and impact of strategies sponsored by state and non-state actors to influence political, economic, and social processes are increasing. One tool of influence may be the organized and systematic mobilization of international public opinion against Hungary. The effectiveness of information operations is enhanced by the speed with which fake news and disinformation can spread via social media. Explicit influence can also be used to generate political and economic pressure, in which international actors may seek to limit our country's ability to act. (Hungarian Government Decree 1163/2020. (IV. 21.)

Since 2018, NATO has also paid special attention to fake news, which can be recognized as a hybrid threat. It has implemented an institutional framework for researching and countering hostile information and disinformation operations, including the following:

– The European Centre of Excellence for Countering Hybrid Threats in Helsinki, established in non-NATO member Finland and run jointly with the European Union;
– Strategic Communications Centre of Excellence in Riga, Latvia;
– Cooperative Cyber Defence Centre of Excellence in Tallinn, Estonia (NATO 2020).

3. Methodology

As a methodological approach, I have examined a number of relevant concepts in the development of social sustainability, conducting secondary research in the available literature. The concept of social sustainability is broad, covering many social domains. I have introduced the later communication-theoretically important

concepts of infodemia and pseudo-news, supported by plots. I have related the former to the notion of hybrid warfare with military implications. Thus, knowing the relevant communication and military theories and concepts, it is easier to understand their practical use and impact on society, as documented by media and academic sources in the context of COVID-19.

4. Findings

4.1. Local Examples

"Misinformation and fake news that appears to be real news is designed to manipulate readers – spreading false information for political purposes. And this is much easier and faster in the age of social media, although major Internet platforms are already taking serious steps to ensure that they reach as few people as possible" – says the page of the European Parliament (EP, 2020). As concerns about COVID-19 and a sense of uncertainty increasingly dominate world public opinion, disinformation campaigns on the subject are becoming more effective and dangerous. The fake news propaganda involves not only clickbait fake news sites but also (foreign) political actors with an interest in fostering information chaos. As we can see from local examples, the main role in the spread of fake news is often played by profit-oriented clickbait sites that are not linked to (foreign) political actors. In the beginning of 2020, the Cybercrime Unit of the police raided several editors of disinformation portals, who were charged with the crime of threatening public safety. Members of the network, which included a number of fake news sites, tried to create panic by using clickbait titles related to COVID-19. Among the stories they posted was one about a woman who collapsed and died at Nyugati railway station because of COVID-19, which police said had achieved its purpose of proving lucrative for the fake news spreaders. The primary source of income for disinformation portals is usually advertising on the site, which can even include advertisements from large companies (Political Capital, 2020).

Political Capital has divided the disinformation narratives of the Hungarian media space regarding COVID-19 into 4 groups:

- The "genocide" theories: the epidemic was spread directly by "someone". According to several articles, the United States is "behind the COVID-19" to destroy China's economy and tourism.
- The "biological weapon" theories: "somebody" has produced a biological weapon, and this would be the COVID-19, which would be used against China in a "third world war".
- "Doomsday" theories: these theories predict the extinction of humanity based on concerns that some authorities are deliberately underestimating the real number of cases.

– The wish-fulfilling news about the "antidote" to the virus: false allegations about the antidote to the virus.

As negative as the impact of fake news on society is, most people do it for profit, without caring about the consequences. There are sites that can bring in automated or self-organized advertising in the context of articles, which pay them per click. They do this by using Facebook pages to drive traffic to them or by sharing the news in certain groups.

4.2. International Example

According to an article in the Guardian in 2021:

> The vast majority of the anti-vaccine misinformation and conspiracy theories against COVID-19 have come from only 12 people. On Facebook alone, a dozen people are responsible for 73% of all anti-vaccine content, even though the US government and its regulatory agencies have deemed the vaccines to be safe and effective. Among dozens of doctors, there were some who have embraced pseudoscience such as bodybuilder and wellness blogger Robert F. Kennedy Jr., who has linked vaccines to autism and 5G broadband mobile networks (Salam, 2021).

US polls in 2020 showed that Democrats and Republicans have sharply diverging opinions on the threat posed by the virus and how the Trump administration has handled it (Schwartz, 2022). 43% of respondents approve of Trump's response to COVID-19, while 49% disapprove of it. But the division is largely along party lines – 83% of the Democrats disapprove of Trump's response, while 87% of the Republicans approve of it, and two-thirds of the Democrats are "very or somewhat concerned" about the virus compared to just 35% of the Republicans. Any crisis generates a high level of uncertainty, which leads to anxiety. This prompts people to find ways to resolve uncertainty and reduce anxiety by seeking information about the threat. They do what people always try to do – make sense of a confusing situation (Yamey, 2020).

4.3. USA versus China

The first outbreak of COVID-19 was in a virology institute in Wuhan, where viruses from bats were studied and several doctors were hospitalized before the virus became widespread. However, according to some foreign (and later national) media, the virus was contracted from soup made from bats. Although US experts and intelligence agencies have denied these reports, Republican congressmen, Donald Trump, and conspiracy theorists have continued to spread them (Yamey, 2020). The result was that 30% of people believed what Donald Trump said, and

25% of people thought it was intentional that China had actually developed such a virus. Then came China's reaction, from which point onwards the COVID-19 epidemic became a US versus China battle, at least in terms of communication. The AP and the Atlantic Council analysed 9 months of article product and social media postings to reveal what happened between the US and China (EP, 2020).

One of the lessons learned is that, after all, China has become the main producer of fake news, because until that time Russia was the country from which there was a significant outflow of articles. China quickly outstripped Russia in terms of the volume of news that flowed out, with Chinese diplomats targeting Western social media, having by then three times as many Twitter accounts and twice as many Facebook profiles as before, although this was previously banned in China. In 6 weeks, the posts were quoted by nearly 100,000 people in 54 languages and reached 275 million users (Brookie–Carvin–Kharazian–Robertson, 2021). China has also received international help to reinforce its message, with Chinese diplomats from France to Panama, Venezuela's foreign minister, and *Russia Today*'s correspondent in Caracas all reinforcing their positions in the media. Saudi Twitter accounts were spreading the articles in Arabic, their own language, and then the Iranian and Russian media took them over without criticism, and it eventually circulated back to QAnon's chat platforms. On Chinese Weibo, more than 300 million people saw these posts, of course, in their in-country broadcasting. In the first half of 2020, almost 1,000 Chinese, Russian, or Iranian Twitter accounts generated millions of COVID-19-related interactions (Kinetz, 2021). China's interactions internationally, but mainly with the West, have been characterized by what is known as "wolf-fighting" diplomacy, i.e. aggressive, belligerent attacks by those critical of China on social media, as illustrated by the examples mentioned above (Faragó, 2022).

4.4. How Can We Protect Ourselves against Fake News?

Defending against fake news is not an easy task either for ordinary people in terms of filtering or for professionals in terms of stopping it. The European Parliament's Research Service (EPRS) recommends that it is important to check the content, the author, the sources, and the images. Before sharing, it is worth reflecting on the veracity of the news and considering our own personal bias, i.e. how much we fear, support, or oppose the news on the topic (European Parliament, 2019).

The Influence of Social Media

One of the affordances of tools and platforms is the so-called actor–network theory (ANT – Callon, 1980), which defines the world as a disordered nexus of local and global networks, where networks are composed of actors but themselves behave

as actors in another network. Since ANT is an increasingly influential but still deeply contested approach to understanding people and their interactions with inanimate objects, it is necessary to follow its future path with careful studies, especially in the field of healthcare.

Bypassing the gatekeepers of traditional media is also influential, as it is not necessary to be on television or radio if you can reach millions of views through print, online on social media channels, or even via SMS. Social media can also have indirect effects, as we have seen in the case of Donald Trump. The former president has been banned from several international organizations for his often-repeated strong statements and for what his environment perceives as extremist behaviour.

Social sustainability is a complex, multi-stakeholder process based on strong and stable cooperation. It has a very important role to play in tearing apart the social fabric and spreading fake news.

5. Conclusions

In conclusion, "infodemia" can be even more dangerous than a pandemic because while a pandemic is temporary and can be followed by a resumption of many aspects of life, an "infodemic" can become part of our daily lives for financial, political, or military reasons. It is therefore more likely to disintegrate social sustainability.

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