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Societal implications of smart cities

Społeczne implikacje inteligentnych miast

Abstract: *Smart cities are considered to be a relevant concept that bridges the relation between technology and society. It assumes the management reserves in human society that can be exploited by different technological tools, that would be able to learn behaviour patterns and adjust different aspects of life accordingly. However, this technologically driven social concept did not take into consideration one of the most important elements of the improved management equation; human, human nature and human behaviour. As well it has little or no regard for the democratic restrictions that are packed in the context of civil and political rights. And it has no interest in the long term effect of the use of smart technology for the development of human skills. In this manner, the article is conceptualized as a critique and discussion of overlooked elements that are reducing the effectiveness of the (smart) technologies on one hand, and on the other hand, they are simultaneously reducing the creative potential of human daily life. Despite the idea of smart societies seems to be beneficial, in general, especially on a macro level, it is considered to be limiting the creative potential of individuals even to the level of their mental deterioration.*

Keywords: *smart technologies, smart cities, human limitations, knowledge society*

Streszczenie: *Inteligentne miasta są uważane za istotną koncepcję, stanowiącą pomost pomiędzy technologią a społeczeństwem. Przejmuje ona rezerwy zarządzania w społeczeństwie ludzkim, które mogą być wykorzystane przez różne narzędzia technologiczne, mogące uczyć się wzorców zachowań i odpowiednio dostosowywać różne aspekty życia. Jednak ta koncepcja społeczna napędzana technologią nie bierze pod uwagę jednego z najważniejszych elementów równania ulepszonego zarządzania: człowieka, ludzkiej natury i ludzkiego zachowania. W bardzo małym stopniu lub wcale nie uwzględnia ona również demokratycznych ograniczeń, które mieszczą się w kontekście praw obywatelskich i politycznych.*

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Nie interesuje się też długoterminowymi skutkami wykorzystania inteligentnych technologii dla rozwoju ludzkich umiejętności.W ten sposób artykuł przybiera formę krytyki i dyskusji nad przeoczonymi elementami, które z jednej strony obniżają efektywność (inteligentnych) technologii, a z drugiej jednocześnie redukują potencjał twórczy ludzkiej codzienności. Mimo że idea inteligentnych społeczeństw wydaje się być korzystna, to generalnie, zwłaszcza w skali makro, uważa się, że ogranicza ona potencjał twórczy jednostek nawet do poziomu ich degradacji psychicznej.

Słowa kluczowe: *inteligentne technologie, inteligentne miasta, ludzkie ograniczenia, społeczeństwo wiedzy*

Introduction

It is indisputable that the 21st century is the time of technology, technological and scientific progress. Historically, human society is changing faster than ever which we can consider being one of the side-effects of globalization that is the human frame of technological development. Industrial processes, such as batch production and automation of working processes have their roots in industrial expansion times, while we can trace first pre-modern computers even prior to the automation of the manufacturing process. However, only post-WWII development advanced technology to the level that Leonardo da Vinci concepts (current Mars helicopter Ingenuity resembles da Vinci's helicopter concept) and 19. century Victorian fiction (e.g. Jules Verne) were systematically implemented. Technological advancement enabled humanity to explore the extreme depths of oceans as well as to explore the universe beyond the solar system. Development of transport and communication abilities are also the practical proof of relativity of space and time (e.g. Donner 2008; Sandvik 2016) to the level that space in time gets compressed almost to the singular point by the ability to transfer the information to practically any point in the earth in a matter of seconds (e.g. Kisch 1995). This consequently enables almost instant manipulation of the human environment at any distance. As long as we consider this from a peaceful perspective, we can see the major benefits of doing so. However, blind trust that either abuse of the technology or at least negligence will not happen can have irreparable consequences on human life. At the same time, it is impossible to overlook socio-technological concepts as introduced by Foucault (1977) and Orwell (1949). Recent events (rule of 45th president

of the USA, 2015 migration crisis as well as the outbreak of global public health crisis) exposed new communication and journalism concepts (e.g. fake news, deep fake, etc.), which relate to what can be simply called as "media lie" in layman's terms (see Berghel, 2017). The problem with this is that there is no absolute truth and that nobody possesses the power over it. This makes truth only contextual and relational, always depending also on the personal pre-set beliefs and value system of individuals. In this manner, one cannot objectively assess the information without incorporating it into their own value system (e.g. Ingarden 1975; Marvan 2006). And since human communication is not based only on the transfer of information but also includes its interpretation (either by individuals, government, media, etc.) we automatically live in a mutually perpetuated fake reality which is grounded in the predominant ideology of a certain society.

The paper in this context tries to provide a few arguments in a non-conventional way to raise the awareness of the issues that are related to usually positive acceptance of the concepts related to smart technologies. Based on the literature review, the article provides insight into some dilemmas that the implementation of smart technologies is facing.

1. Smart society

Over the last decades under the influence of technology development and its penetration in the daily lives of a majority of developed countries' populations, social sciences and humanities started to observe societal changes. New concepts in different fields of the interaction of humans and technology started to emerge and were covered in concepts such as information society (as the broadest conceptualization of technology-induced change of life on a major scale), e-government, e-state, smart cities, business 4.0, etc., (as the conceptualization of the technological innovation introduced in the managerial processes at the institutional level) and as the internet of things (as predominantly micro-management of habitat to one's own convenience, based on the interconnectivity of technologies).

All these concepts work basically on the algorithm of efficiency based on the (in)voluntary input of personal habits information and interconnectivity and exchange of information among the systems, resulting in the automated decision on use and management of resources in

a most efficient manner. On a mezzo scale, one can demonstrate this by the concept of "smart cities" (e.g. Batty et al. 2008; Albino et al. 2015). Smart cities in this perspective are systems of interconnected devices, enabling fluidity of individual lives based on predicting and controlling their habits.

In the theoretical case, we can establish a set of combinations of technologically equipped people (using smartphones, car navigation, etc.). A city that struggles with traffic jams can, based on the signal information (geolocation), understand the average movement patterns of inhabitants within one month. The mobile phone signal will tell the control computer where the density of mobile phones is highest at a certain moment, speed of moving the mobile phone will indicate if people are walking or driving cars, etc. Based on this, the control computer can, based on the aforementioned information, adjust the traffic lights in order to reduce the traffic jams, send the information on traffic jams and recommends the detours, etc (e.g. McGuire 2018). However, the same system can be used by the authorities to control the protests (e.g. Vitale 2005). It can track not only the count of signals but also the identifying information, traced back to phone numbers and users (Samuel 2008; Koops et al. 2018). The question behind this is if this is legal (thus legality is only a matter of political will) and legitimate in the eyes of the General Declaration of Human Rights adopted by the United Nations Organisation in 1948. Especially regarding the freedom of movement (article 13) and freedom from interference into one's personal life (article 12).

The second case of road management which exposes different elements of the human-technology bias danger is the question of override switch and to whom it shall be granted. We know that human decision-making is prone to mistakes or intentional non-conformity actions. In this perspective, a technological override switch would be helpful and in many cases rather simple to develop (e.g. preventing wrong-way driving with non-invasive measures on highway (entrance/exit) ramps, or car inbuilt direction detection system that would take over the control over the car in a questionable situation. On the other hand, European Union requested a mandatory "E-Call" system in all cars after April 2018 (some countries, such as Slovenia, even earlier). And we have at this moment still no reliable studies on how this "application" influences ambulance response time and other vital parameters, which would potentially justify the constant location surveillance and potential eavesdropping (as two most common controlling effects of the technology).

On the other hand, there is a question if people should have the override switch available that would disconnect them and their private space from the information highway, either as an act of rebellion or as a protection from malfunctioning technology. In the technical[2] environment, people with functional knowledge of using the systems have the possibility to take basic control over individual systems manually (e.g. ability to close/open the main water pipe, main electricity switch, etc.). However, in the technology disabling the information flow is often much more complicated and due to various reasons also undesirable, and thus prevented from happening. In this manner we can, for instance, see the inability to kill mobile phone signal any other way but by removing the inbuilt battery, or completely draining it. Despite here we enter a control/trust debate of a set of people who do not mind if one's location is known when the person has nothing to hide against those who argue that even potential of geo-locating is against the basic right of privacy and non-interference into ones' life. The dilemma, despite very much real, has more theoretical value in the debate between the libertarian perspective of human rights advocates and authoritarian/totalitarian defenders of the controlled society as preventive measures of collective safety.

Despite different technology and technology-related topics experts evaluating the benefits of controlled life over chaotic randomness (e.g. Qin at al. 2012; Sinatra Szell 2014), this does not contribute to the smartness of the spaces or society. It only reduces the randomness. But due to the ability of technology to learn the patterns of an individual's life, it reduces one's need for mental activity (even on simple daily tasks, such as locking the doors), to the level that certain skills/actions will be taken off personal competences, making them even less functionally independent and in this sense "stupid". In other words, one can argue, that a smart society in fact produces "stupid" individuals (see. Roblek et al. 2019; McGuire 2018), unable to function without technological support, such as navigation, reminders, etc.[3] On the other hand, when the concept of "smart people" in combination with the "smart living" is used in the context of smart people, the reference is directed towards their capacity to accept certain concepts or narratives (see Jucevičius

[2] Technical shall not be mixed with technological.

[3] As an example we can take our ability to memorize phone numbers. Before mobile phone era, most of active people memorised most important phone numbers, such as family and close friends, while today most people do not know any of these phone numbers.

et al. 2014). Categories indicated by Giffinger (2007) and Cohehn (2013) (in Jucevičius et all, 2014) indicate that "smart people" (as residents of smart cities), shall be educated, open-minded and flexible and their "smart life" shall be concentrated around health and use of benefits of a developed society. The concept of the smartness of the cities developed to the level that some authors (e.g. Kim et al. 2021), automatically assign the dominance of the city over the rural areas by stating things, such as "Cities are important because people in the cities are important" (Kim et al. 2021, p. 13) and thus rejecting the importance of the modern technologies that advanced the development of rural areas for the first time in the decades, enabling them to compete with the urban areas. At the same time, some authors (e.g. Patel, Doshi 2019) in relatively recent years claim certain possibilities as smart cities-related that were implemented in many cases in developed countries (assuming the political willingness) about a decade ago.

2. Limited society

Recent health crises showed in many "democratic" societies the extreme power of mass control by the use of mobile phones (e.g. Robinson 2019; Vitale 2005). Control over the location, tracing the contacts and similar practices, that were used for "medical"/health care purposes can be used also for "national security" or "criminal investigation" purposes (e.g. Vassilieva 2020; Zayas, Bouhaben 2021). Especially in the case of general population, which is ignorant, and often acts in effect as part of the mass protests. However, the limitation of society, in general, started before national systems of house detention (on global police state see Robinson 2019), which can be, taking into account historical analyses of authoritarian/totalitarian systems, potentially prolonged under the current conditions.

Technological limitations (and the freedom at the same time) of society are actually derivate of information overflow and spatial disconnection and sensory disconnection of individuals, their experiences and consequently their holistic development.

Information overflow (see Lee et al. 2016) supported by media war for profits forces people to select the information flow which results in a schizophrenic attempt to create a valid picture between different ideological positions, where information is seldom reported, but predominantly already

interpreted within certain value orientation. On the other hand, people can subscribe to the information flow that matches their value system (e.g. Berghel 2017) and does not critically evaluate the reality, which results in an ideological divide within the nation that leaves little space for a plurality of views since it is occupied usually between two to three predominant ideological positions and everything else is marginalized. In many cases regardless of which approach one takes, it will result in strong technology dependency, which is slowly getting recognition as non-chemical addiction (see Kuss, Billieux 2017; Roberts et al. 2014) and medical condition.

People are able to experience (to a degree), different spaces, cultures, and events within their own homes. Despite this not limiting the travel over last decades, as one would expect, people are able to experience different localities better with the use of modern technologies. An additional step towards immobility (or overcoming it) was done during the COVID-19 pandemics, when online concerts, theatre shows, exhibitions were offered, not only as video recordings but as an actual live performances in the virtual context. The third aspect of limitation is a new perception of some historical activities, which are not only questions of artistic expression but the creation of oxymorons, such as listening to the audiobooks being considered "reading". Some of them are already incorporated into new words such as "infotainment" (see Thussu 2007) or "infomercials" (e.g. Hope, Johnson 2004), which, in pursuit of commercial interests, packs the information/facts/knowledge into the entertaining or advertisement program and reduces the importance or relevance of information/knowledge.

With this perspective, one can start to question the previously mentioned societal development, where the human race was considered modern/industrial society after industrialization and evolved into a post-modern/post-industrial society. However, at this point we have unresolved dilemmas. Can current civilisation (with some obvious exceptions) still be considered post-modern/post-industrial and within it, something additional (e.g. information society), or information society is actually form of post-modern society? Despite it being hard to provide this answer due to no time distance, which would enable a more objective perspective, we can try to address another dilemma, which is rather overlooked in the societal development perspective.

Under the influence of new education principles, early development of technology, visible advancement in sciences etc. there was a rather short

period when post-modern/post-industrial society was evolving into (or presented as) knowledge-based society. It was a rather short period before the absolute technological innovation explosion, in which the importance of knowledge was put as the pedestal of major advancement factors. This position was taken over by the concept of the information society, which praises information communication technologies as the main factor of civilizational advancement.

3. Discussion

Despite all the aforementioned criticisms, which are justified in the theory of human rights as well as in the perspective of "Renaissance"/"modern" human beings, we cannot deny evolution. Not on the level of the historical evolution of the hominid family, within which *homo sapiens sapiens* evolved as sole remaining species. Some evolution theorists speak of "cultural-driven" evolution, which bases on the ability of a person to adapt to the different cultural contexts, as well as to the new, technology-based, environment. On the biological level evolution theorists observe a delay in reproduction (which can be considered a cultural trait), as well as delay in menopause (which is a natural trait), as well as reduction of the number of progeny (which again is a more cultural trait, based on medical development, enabling higher survival rate). We can observe this best (with certain exceptions) as the number of newborns in more and less developed countries in combination with their survival rate to the age of five.

In this situation technology contributes to the development of new humanoid species that will incorporate technological enhancements, not only as medical support (e.g. pacemakers, hearing aid, prosthetics) but as enhancement of "normal" human capacities, either on a cognitive or physical level. Bionic technology (e.g. de Lange 2015) will become more and more accessible and being cyborg (see Thweatt-Bates 2016; Meyer, Asbrock 2018) will not be only the question of identity[4] but fact connected to the inbuilt technology on the mass level recognised also in the legislation. So

[4] So far there is one reported case of officially recognised cyborg (Niel Harbisson), who has implanted special functional antenna into his head and considers it as his body part.

far legislation treats bionic parts as objects and not as human body parts, which would change the perspective on human technology dependence.

However, despite the technological advancement that has a predominantly positive connotation as such, there are not only limitations but also setbacks. They can be considered not only on the level of individual and his traits (since we can support the idea that individuals can use the technologies in different manners) but predominantly on the level of the society. In this manner, we shall resist pushing aside the concept of the "knowledge-based society", which shall become a focal point of societal development. Knowledge is in many cases replaced by "common sense", "street smartness" and other concepts that are not "evidence-based" or "knowledge-based". This situation was in the past years a productive hub for conspiracy theories, fake news, governmental disinformation and prejudice based opinions. However, all this is deeply rooted in the change of the value system that moved from knowledge as central value and Protestant ethics of work (see Harold 1997) as the value in itself toward diminishing both categories into the merely transitional values, being replaced by (unsubstantiated) fame and the Jewish value of trade as a tool of accumulation of wealth (see Green 1997). Information technology pushes traditional values of knowledge and works into oblivion by increased personal ignorance enabled by "I can google it, so I do not need to know this" and by the marginalisation of productive work in relation to post-production and retail. Despite such remarks seeming to be only individuals' nostalgia for some past times, the COVID-19 pandemics showed which economic sectors faced the biggest changes, either by redesign of their work model or by being stopped for a certain amount of time. Despite it seems that automation and technologically supported work processes of so-called "low added value" jobs resolved social issues by eliminating of such jobs, it only changed their nature. Then blue-collar workers can be compared to the low-level white-collar jobs or, in cases of special skills, they can overtake them by revenues, as well as employment opportunities.

Conclusions

The development of technologies introduced various improvements in the quality of human life. However, in many cases, it does not address the major issues, such as poverty, hunger, or social inequality. Over the past decades, it added a few new concerns connected to the digital divide, which is slowly decreasing with the change of generation. However, on the level of politics and policies, there is a set of concerns that shall be systematically addressed in a serious manner in order to preserve positive achievements of societal advancement. Technological dependency makes the world vulnerable to new security threats, that include remote control over individuals or basic infrastructures.

Most of the research today is technology-oriented and provides support for further technological advancement, while the arguments on threats to human rights, mental and physical health are set aside. In this manner the research and critical argumentation do not focus on the potential misuse, not only by criminals and terrorists but also by legitimate business, and government agencies. As the COVID-19 situation indicated in practice, governments have a strong interest in remote control of the population, which could be abused in the case of political turmoil.

Technology can improve the life of individuals and society, but we too often consider it as an absolute solution to the problems of humanity. Unfortunately, technological development over last decades does not show adequate effects that we could consider the solution of main problems of humanity, such as poverty and hunger reduction, significant improvement of environment protection, strong advancement in some of the most common medical issues as well as in slowing down the decline of basic human rights connected to the surveillance and privacy invasion, either by government, governmental organisations or by corporate business. However, there was an increase in new, technology-related crimes, wars and divides in humanity. As already indicated, the scientific community should pay much more attention to this as well.

References

Albino, V., U. Berardi, R.M. Dangelico (2015), *Smart cities. Definitions, dimensions, performance, and initiatives*, "Journal of Urban Technology" 22(1): 3–21.

Assembly, U.G. (1948), *Universal declaration of human rights*, "UN General Assembly" 302(2): 14–25.

Batty M., K.W. Axhausen, F. Giannotti, A. Pozdnoukhov, A. Bazzani, M. Wachowicz, G. Ouzounis, Y. Portugali (2012). *Smart cities of the future*, "The European Physical Journal Special Topics" 214(1): 481–518.

Berghel, H. (2017), *Alt-News and Post-Truths in the "Fake News" Era*, "Computer" 50(4): 110–114.

de Lange, C. (2015). *Welcome to the bionic dawn*, New Scientist 227(3032): 24–25.

Donner, J. (2008). *Shrinking fourth world? Mobiles, development, and inclusion*, [in:] J.E. Katz (ed.), *Handbook of mobile communication studies*, (Cambridge: MIT Press): 29–42.

Foucault, M. (1977), *Discipline and Punish. The Birth of the Prison*, (New York: Random House).

Green, R.M. (1997), *Guiding principles of Jewish business ethics*, "Business Ethics Quarterly" 7: 21–30.

Harold Jr, B. (1997), *The protestant ethic. Weber s model and the empirical literature*. "Human Relations" 50(7): 757–778.

Hope, W., R. Johnson (2004), *What is an Infomercial?*, "Advertising & Society Review, 5(2).

Ingarden, R. (1975). *Remarks concerning the relativity of values*. "Journal of the British Society for Phenomenology" 6(2): 102–108.

Jucevičius, R., I. Patašienė, M. Patašius (2014), *Digital dimension of smart city. Critical analysis*. "Procedia-Social and Behavioral Sciences" 156: 146–150.

Kim, H.M., S. Sabri, A. Kent (2021), *Smart cities as a platform for technological and social innovation in productivity, sustainability, and livability. A conceptual framework*, [in:] *Smart Cities for Technological and Social Innovation*, (London-San Diego: Academic Press): 9–28.

Kirsch, S. (1995), *The incredible shrinking world? Technology and the production of space*, "Environment and Planning D: Society and Space" 13(5): 529–555.

Koops, B.J., B.C. Newell, I. Skorvanek (2018), *Location Tracking by Police. The Regulation of Tireless and Absolute Surveillance*, "UC Irvine Law Review" 9: 635.

Kuss, D.J., J. Billieux (2017), *Technological addictions. Conceptualisation, measurement, etiology and treatment*, "Addictive Behaviors" 64: 231–233.

Lee, A.R., S.M. Son, K.K. Kim (2016), *Information and communication technology overload and social networking service fatigue. A stress perspective*, "Computers in Human Behavior" 55: 51–61.

Marvan, T. (2006), *Obstacles to the Relativity of Truth*, "Organon F" 13(4): 439–450.
McGuire, M. (2018), *Beyond flatland. When smart cities make stupid citizens*, "City, Territory and Architecture" 5(1): 1–11.
Meyer, B., F. Asbrock (2018), *Disabled or cyborg? How bionics affect stereotypes toward people with physical disabilities*, "Frontiers in Psychology", 9: 2251.
Orwell, G. (1949), *Nineteen Eighty-Four. A novel*, (London: Secker & Warburg).
Qin, S.M., H. Verkasalo, M. Mohtaschemi, T. Hartonen, M. Alava (2012), *Patterns, entropy, and predictability of human mobility and life*, "PloS ONE" 7(12): e51353.
Patel, Y., N. Doshi (2019), *Social implications of smart cities*, "Procedia Computer Science", 155: 692–697.
Roberts, J., L. Yaya, C. Manolis (2014), *The invisible addiction. Cell-phone activities and addiction among male and female college students*, "Journal of Behavioral Addictions" 3(4): 254–265.
Robinson, W.I. (2019), *Accumulation crisis and global police state*, "Critical Sociology" 45(6): 845–858.
Roblek, V., M. Mesko, V. Dimovski, J. Peterlin (2019), *Smart technologies as social innovation and complex social issues of the Z generation*, "Kybernetes" 48: 91–107.
Samuel, I.J. (2008), *Warrantless location tracking*, "New York University Law Review" 83: 1324.
Sandvik, K.B. (2016), *The humanitarian cyberspace. Shrinking space or an expanding frontier?*, "Third World Quarterly" 37(1): 17–32.
Sinatra, R., M. Szell (2014), *Entropy and the predictability of online life*, "Entropy" 16(1): 543–556.
Thussu, D.K. (2007), *News as entertainment. The rise of global infotainment*, (Thousand Oaks-Los Angeles-London: Sage).
Thweatt-Bates, J. (2016), *Cyborg selves. A theological anthropology of the posthuman*, (London: Routledge).
Vassileva, R. (2020), *Bulgaria. COVID-19 as an excuse to solidify autocracy?*, Verfassungsblog, https://verfassungsblog.de/bulgaria-covid-19-as-an-excuse-to-solidify-autocracy/ (access: 30.08.2021).
Vitale, A.S. (2005), *From negotiated management to command and control. How the New York Police Department polices protests*, "Policing and Society" 15(3): 283–304.
Zayas, V.A., M.A. Bouhaben (2021), *Pandemic/Screen. The visual motif of police violence in public spaces during the COVID-19 pandemic*, "Communication & Society" 34(2): 297–313.