MY SMARTPHONE IS MY SENSE – AUGMENTED EXPERIENCE OF THE CITY

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Abstract

According to Marshall McLuhan's theory of media, in which he claims that the media have become prostheses of human senses, nowadays we are witnessing the growing domination of mobile devices over most human activities in daily life. Why are social media so important in our lives? There are growing groups of application developers who offer brand new solutions which on the one hand can help us in our daily lives, but on the other they have a potential to disturb them, too. Some of these solutions offer a very interesting option of creating the so-called augmented reality, which enables us to gain access to a lot more data existing and circulating in our surroundings. Even social media can be used in addition to real architecture for building a new spectrum of impressions related to a place or city. It is the time for competition in which creativity can show us a new scenario for the future. The article is a subjective set of selected cases demonstrating the use of technology in devices, such as smartphones or tablets, and the potential of applications which use cellular networks to transmit data. They can be used for redefinition of the concept of experiencing the city and urban structures. This viral experience can shape new relationships and dependencies between people, media content, social network and urban spaces. How far will we go in the future? Which of these new phenomena will prove to be unimportant and will disappear as unnecessary? Gradually, as time goes by, we will find out.
The city as a collective living structure is the place of producing experience and consuming art which is based on the urban scale as the background for acting pedestrians; it may be seen as a kind of a digital game. The presented content may lead to the conclusion that, as humans, we are dependent or at least very attached to new technologies that allow us to define our identities and the position in the progress of civilisation.

Mind extension

Walking down a street heading for work or strolling crowded streets of numerous towns or metropolises, all the time we see a great number of people who – marching energetically, chasing time, are on the way to some places or destinations, and – while moving – they talk to themselves or to others, an earphone plugged into the ear, bent over the screens of their mobiles, with their thoughts as if anchored at some other, seemingly very distant, places, looking totally indifferent to their surroundings or to the reality in general. One feels tempted to ask *Quo Vadis*? Is this the norm, since the majority of people act this way? This article endeavours to give account of the present situation and make a contribution to the discussion on the role of mobile technologies distributing media contents in our daily lives. The subjective selection of examples for discussion is aimed to demonstrate the diversity and the wide range of applications of the IT technologies, products and software, which use a great variety of sensors, contents and information. In combination with data processing algorithms, devices such as smartphones[1] may replace senses – like prostheses – serving the purpose of contact with the surrounding world on many levels. The current validity of the problem and the ubiquitous presence of the devices in question make the issue familiar to most of us, so it requires some comment, scientific research and a debate on the future trends of technology and civilisation evolution. The examples of applications and mobile device software selected for description offer a new way of exploring spaces, cities and architecture, a new way of interacting with other people and groups, contributing to rapid dissemination of data and accessing information. What are the benefits and what are the hazards related to using these merged real and virtual worlds, which exist almost simultaneously? The presented examples and reflections have served formulating certain conclusions and taking a stand in the broad discussion accompanying the process of familiarising the general public with information technology.

Information civilisation

"[…] The language of architecture is undergoing constant change. New technologies may bring people and culture together in a way that would be unique in the human history. I particularly believe in the value of these possibilities."[2]

[Renzo Piano]

Confronting the world described in contemporary literature, particularly in science fiction, with the real life at the time of booming advanced technology freely available to the information society,[3] we may come to the conclusion that the future predicted by various visionaries is

[1] Smartphone – [smart + phone]; these are devices used for telephone conversations but not only to this purpose. Their advanced functions include additionally sending messages, surfing the internet, applications enabling using them as digital tablets or even notebooks; absence of a keyboard is in this case compensated by the touchscreen. The devices now feature high-resolution screens which provide high quality images, where – at the first glance – it is impossible to distinguish individual pixels. Moreover, smartphones have operating systems, digital picture and film cameras, sensors and gyroscopes, so it is possible to download software onto them – applications which use the above-mentioned components and nowadays often replace much bigger devices.

[2] Renzo Piano's statement. *[*unless stated otherwise, all the quotations have been rendered into English by the translator of this text]*

[3] "*Theories of society development define the information society as the next stage of society development, following the industrial society. It is also called the post-modern or post-industrial society. From the point of view of the division of*

happening now, right in front of us, making us eye witnesses of the events. Development of the civilisation coupled with the progress in electronics enable a revolution in the scale of the whole era. Using digital media and the content offered in the global Internet network has annihilated a lot of barriers in the scale of the whole world. The revolution is happening in every aspect of human life, and absence of borders for information flow and computerization of daily life create a new order and new interdependencies within social hierarchies. Statistics collected by the Main Statistics Office in Poland[4] in 2015 show that 61.5% businesses were using mobile broadband connections, and 75.8% households had access to the internet, 71.0% of which – to broadband internet. The characteristic and relevant features of information society are: a highly advanced sector of services using digital media (banking, finances, telecommunication, information technology, research and development as well as management), knowledge-based economy and the high average level of education in the society. The social structure in turn is characterised by decentralisation and revival of local communities.

The contemporary world is dominated by information and codes, which are present almost everywhere – both as metaphors and as digital content projected in a small scale and in a large format. It has been made possible by the omnipresent media as well as by the incessantly, unconsciously processed data – ubiquitous computing,[5] which does not require supervision and which is done by machines and computers.

Marshall McLuhan[6] was a visionary of digital media and the author of the saying that "*the medium is the message.*" He proposed that digital media in principle serve transmission of information. His other claim was that "*The aim of the new media is to provide the recipient with the full spectrum of sensual experiences by combining auditory, visual and tactile sensations, i.e. to create a situation allowing the recipient to get involved in the message*."[7]He defined digital media as a prosthesis familiarising humans with technology, which may be used depending on the task to be performed, up to the point where it will replace some of the senses.

A renowned media theoretician Lev Manovich defined five criteria affecting the shape of the new media, with the reservation that not all the criteria must be met at the same time. The first one is numerical representation – the digital form, as opposed to the analogous form of the traditional media. The latter may be digitalised and thus transformed into the digital form. Another feature of digital media is modularity. Components of digital media are used to create other components of a higher order, which phenomenon may be very well illustrated by the

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labour within the society, the information society would be the one in which 50% plus one person or more, among the professionally active people, are employed in the information processing sector. Daniel Bell defined the work of a pre-modern person as an interplay between a human and nature, in the case of a modern man it used to be the interplay between man and inanimate nature, whereas the work of a post-modern man is the interplay between humans." https://pl.wikipedia.org/wiki/Spo%C5%82ecze%C5%84stwo_informacyjne, as of 15th March 2016.

[4] http://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/spoleczenstwo-informacyjne/spoleczenstwo-informacyjne-w-polsce-w-2015-r-,2,5.html

[5] Ubiquitous computing or pervasive computing, also prevalent processing – a concept illustrating the use of computer devices in all possible areas of life, especially the use of mobile devices, such as mobile phones, portable computers or PDAs and wireless networks. The term is also extended to refer to using devices of the presence of which or at least the operational rules of which an ordinary user is unaware; these are processors embedded in numerous daily use devices. http://pl.wikipedia.org/wiki/Przetwarzanie_bez_granic.

[6] Herbert Marshall McLuhan (1911 – 1980) developed the concept of viewing the world as a global village, still considered one of the leading authorities in the field of media.

[7] K. Loska, Dziedzictwo McLuhana – między nowoczesnością a ponowoczesnością, Wyd. RABID, Kraków 2001, p. 80

principle of creating a hypertext in the form of a code or a coded recording of a digital image in the form of series of signs. Other features are automatization and variability. The digital form offers the opportunity of performing automated actions, which may be compared to colour correction in a photo-editing programme. Objects in the new media are not single, but they often exist in an infinite number of versions. Marcos Novak is of the opinion that computer culture turns every stable value into a variable. The last feature of the new media is, according to Manovich, transcoding, i.e. the option of translating one media form into another, which is possible owing to the digital form and the recording in many formats. As may be concluded from the above text, digital media may be related to autonomous processes and occur in different forms, they may be easily copied, edited and compiled.

The remarkable phenomenon of smartphones

The rapid development of mobile telephony has been observed since the 90s of the 20th century, and now the great technological race is still going on, bringing new solutions for the beneficiaries of the progress. Once the mobile phone had become an easily available, handy and popular device, manufacturers of these devices started adapting them to new functions, which in turn generates increased demand as more and more people feel the need to possess the "Swiss Army knife" securing survival in the urban cyber-jungle. Due to its properties, the smart and mobile phone is slowly taking over the market previously dominated by personal computers or later on by notebooks. The devices' ever larger and more efficient screens are even pushing the currently popular digital tables out of the market. Hardware is not everything, equally important is the software. The market of applications (software) operating on mobile devices is growing very fast, offering more and more sophisticated functions and uses. Development of the LTE[8] Internet is also helping to cope with the increasing amount and size of transmitted content that may be packed into the phone or even into the "pocket." On the one hand, the devices and data transmission have become more accessible, but on the other, this universal presence may soon become a nightmare invading our last bastions of privacy and free time. In consequence, we might risk a thesis that the smartphone as a new icon of the contemporary world replaces our senses – *my smartphone is my sense*.

Portable devices have one great advantage over stationary ones – they can be taken almost everywhere. It is thanks to them that several daily tasks that once could only be done at one's desk (mail, bank transfers, looking up information, social networking) are now possible while travelling in the car or on a tram. Moreover, the use of such functions as *inter alia* geotagging (determining the location of a device or its owner by giving its latitude and longitude coordinates) has created the options of totally new social interactions. *Find my phone, show my location to my closest or selected friends, search for friends or events in the nearest area* are just a few of the functions offered by applications which may positively affect developing social interactions. Popularity of mobile devices (telephone, tablet, laptop) gives their users access to

[8] Wireless fast internet operating on radio connections of mobile telephony.

the "omnipresent"[9] Internet and media content while they are "on the road." Moreover, they provide users with additional layers of information displayed simultaneously on the screen, overlaid on the image of the real world, in the form of the so-called augmented reality.[10] The small mobile phone screens or the slightly larger ones of tablets or computers, or even special glasses, in combination with large-format display boards, may create a system of urban media, which will become a consistent whole in the future. We surround ourselves with screens of great potential like with *windows opening out into the world*. The prevailing amount of transmitted content are dynamic graphics, therefore the digital media must be considered an open film or a series of images, never in the scale of a single shot. Similarly, Ingarden's aesthetic experience of looking at a sculpture is an experience in time, in which the observer is moving. The same refers to large-format media in the scale of a place, which we observe from various distances, often in motion.

Adopting the perspective of an urban space researcher, I decided first to observe and later on to describe the effect of the smartphone on experiencing and perception of spaces and places. I did not mean using the map like a GPS device, I wanted to explore the character of the functioning sense, the sensor for other senses – sight, hearing and touch.

Apps

Applications, i.e. programmes functioning within the operational system of a device, such as a computer, tablet or smartphone, which deploy complicated electronics for the purpose of using its properties depending on the needs. They usually deploy more than one feature, enable interpretation of information obtained from sensors, facilitate things or offer the user some entertainment. The software may not always be useful; sometimes it gives the impression of being completely useless, yet it is the level of clients' satisfaction and approval that counts as the measure of popularity, which translates into profits for their developers. The market of games and other software for mobile devices is not created by the corporations manufacturing the devices, but by ingenious developers who work on commission or implement their individual ideas on a freelance basis. Applications may be divided into groups performing specific functions, and the processor may generate the illusion of a more real device, once attributed to specific devices.

The contemporary photo camera market reacted fast and with determination to the new trends – the growing popularity of photography, blogs and related ideas – by creating "*compact cameras with the function of a phone*." In most cases, however, manufacturers tend to implement a

[9] Wireless internet – the transmission of signals is done in a bilateral way due to the exchange of data between mobile phone networks. One of the fastest at present and at the same time one of the most popular solutions is the LTE internet and virtual discs with data saved in "clouds."

[10] Augmented Reality (AR) is the area of research which combines two worlds – the real and the virtual. AR does not create a complete new world (in the way Virtual Reality does), but complements what we already know by overlaying virtual images on the image of the real world. Most experiments in this area consist in using the images of the "real" world and complementing them with computer-generated graphics. /http://blog.antropologia-internetu.pl/2011/01/27/augmented-reality-rzeczywistosc-rozszerzona/. For example, putting on a pair of semi-transparent glasses, an AR user may watch as the world goes by in the streets of a city together with the elements generated by the computer overlaid on the actual image of the world. http://pl.wikipedia.org/wiki/Rzeczywistość_rozszerzona.

reverse solution – they pack a digital matrix and a modest-size lens into the small telephone case. The apparently limited ability of such devices to capture reality is often compensated by the software which allows quick and easy correction of deficiencies, instant retouch or even "developing the RAW negative"[11] in a "digital dark room," or producing effects similar to the ones obtained by using Photoshop. Sightseeing in cities nowadays does not entail carrying huge cameras with lenses, and the fact that everybody around possesses and uses some small portable device develops communities focused around certain specialised portals, such as .e.g. Instagram, and popularises photography as such in the world.

At present, smartphone apps may be classified into several groups. Mono-functional apps replace one device, such as e.g. flashlight, photo camera, film camera, map or Internet browser, which are probably useful while sightseeing in a city or creating documentation, making notes etc. There are, however, other apps using more functions, which make them more useful and handy. Applications using location maps and information on geographical coordinates of the place where a picture was taken may be useful at the moment of locating the shot images. In turn, social portals in the version on-line or in the form of a programme provide access to numerous smartphone components replacing other devices. A further evolutionary stage which may be observed are applications enabling users to play games or interact with other users within the city or in an open area. Apps for sports people, such as *endomondo*[12] or *strava*,[13] allow them to share their sports achievements or results, and thus foster competition, not necessarily simultaneously, or offer motivation to beat the result of a specific person. Sports performance may also be visualised in time. It is a form of social interaction within a specific group of people.

Apps supporting social portals (*Facebook, Twitter, Instagram, Snapchat* and others) allow their users to react instantaneously to posts or events, to share posts, photos etc., which permits immediate and global dissemination of information and, in consequence, making it look like a living and vital structure. Additionally, providing information on your location to a group of friends enables planning a spontaneous meeting if someone is in the vicinity. Some apps, like e.g. *Happen*, make it possible to find people among the ones who we meet accidentally while being at a specific place and time. Their functioning is based on measuring distances. Geotagging allows its users to find a car to rent for a few hours which is parked somewhere in the area. The system is being developed by BMW and has become very popular in German metropolises. Keyless access to the cars is made possible owing to a smartphone app.

Getting a taxi has never been so simple as by using the apps developed by the international network *Uber*. The software finds the address where we are and monitors the route taken by the car which is coming to us or which is to take a person or package to a specific address.

There is yet another interesting group of applications allowing the use of augmented reality (AR), which may be displayed e.g. on the screen of a mobile device or even on glasses (e.g.

[11] Developing a digital image file corresponds to developing an analogous negative in a dark room. During the process it is possible to introduce tone or colour corrections, use filters and obtain various effects.

[12] Application for runners documenting the route, running time etc.

[13] Application for runners and cyclists documenting the running route and time, the cycling route and vital data related to the physical condition of the user while doing the exercise; additionally, it enables competition with other users, e.g. registering the record times on certain routes or distances.

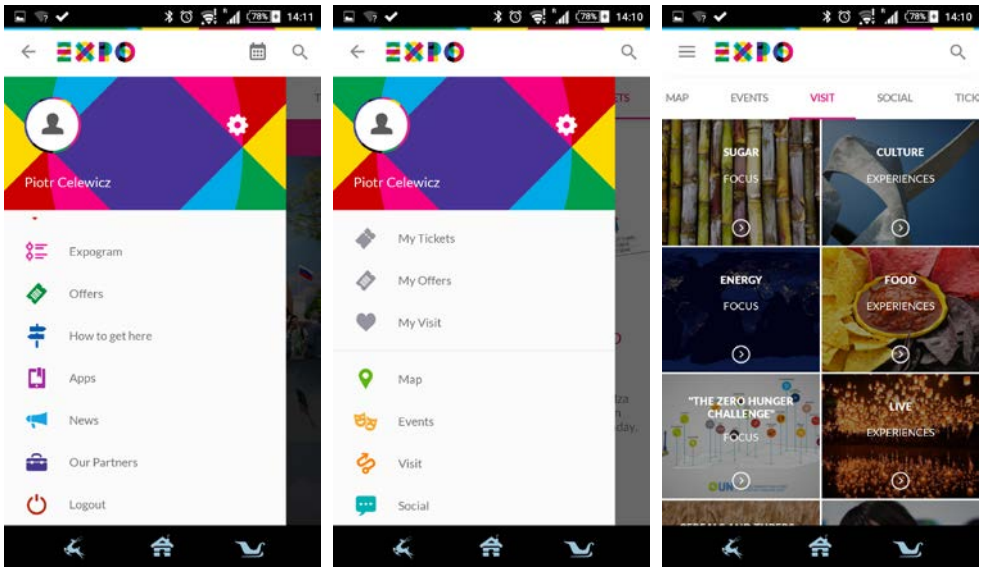
G*oogle Glass*) specially made for this purpose. During the last biennale in March, students of the Academy of Fine Arts in Kraków prepared the application called *Memorystream*, enabling its users to complement the scenery of the sculptures located in the generally accessible space of Matejko Square with images generated live, which could be watched on the screen of a mobile device like a film created simultaneously to supplement the real picture.
In order to vamp up certain special events or places in a city, we may have to use new techniques inviting the audience to a more active participation, such as e.g. media screenings. Specially developed software enables users to control and manage media content during temporary events. An example of such realisation is the *Ars Electronica Center* building in Linz, Austria, which has a media façade turning into a projection screen during events of special significance for the city. The audience, the participants, may overlay their content onto the projected images or take part in a game. It is a very interesting concept, positively affecting the development of local identity of the place and community.

Expo Milan 2015

The World's Fair EXPO 2015 took place in Milan in the Republic of Italy between the 1st May and 31st October 2015. The exhibition was exploring the theme: *Feeding the Planet, Energy for Life*. 147 countries participated in the exhibition, which was visited by millions of people. In order to help the visitors to explore the exposition and to navigate their way through the programme of events, the organisers offered a very interesting solution – **Expo Milano Official App** (Fig. 1 – 8). The mobile app, which I decided to download and use during my stay at Expo 2015 in Milan between the 29th and 31st October 2015, performed many functions facilitating moving around the frequently crowded area, which I found very useful. There was also another app (Expo 2015 Milano Live) for people who could not come to Milan, yet they wanted to participate in selected events live, though via their mobile devices.
In order to use the application, first of all one must own a smartphone, next – they should download the app from the appropriate distribution platform (*Apple, Google Play* etc.) and install it. As far as the technical requirements are concerned, the software installation proceeded in a standard way, the app was available for all mobile platforms. Additionally, if the device had access to Wi-Fi or LTE Internet, the app also offered access to the most recently updated news. Geotagging, combined with the *Bluetooth* technology, helped to determine the location of the user, which was necessary for selecting the events taking place nearby. Once the user had created and verified their personal account, the software was ready for use. The first convenient function was the option of buying tickets on-line, which eliminated the burdensome queueing. The individual profile enabled selection and recording of interesting events. The main menu offered quick access to tabs, such as maps, events, trips, community, full Expo programme and guidance on how to get to places, the latest news and partners. Suggestions of interesting places to visit were presented in an attractive way (Fig. 3). Such a huge event required that visitors should be able to get there conveniently and fast, so the app also offered guidelines on how to use different means of transport (Fig. 4). Combining the app with geotagging allowed precise navigation within the closed area. The *Bluetooth* communication enabled sending

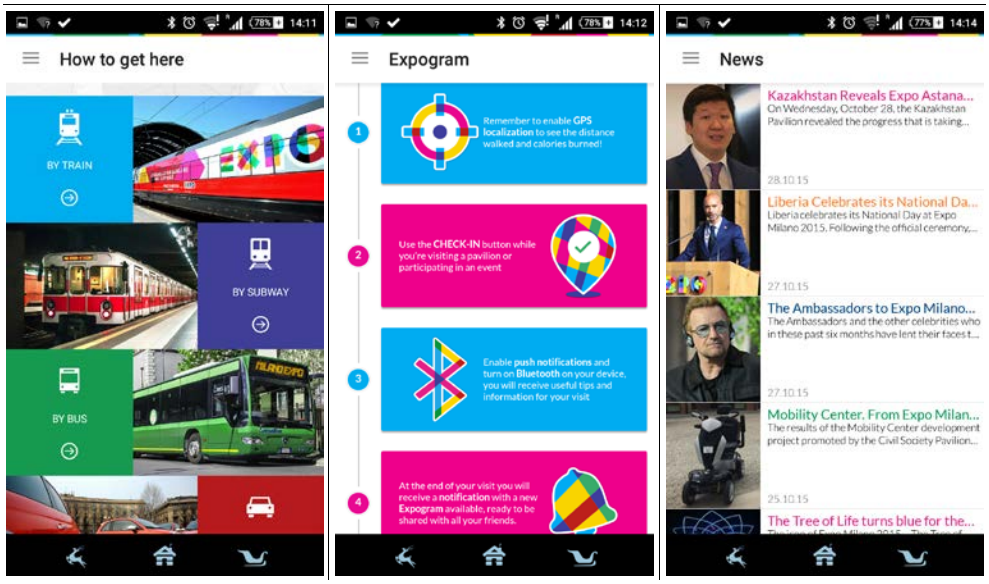
messages about events taking place close to the current location of the user, who was subsequently redirected to the website providing more detailed information on this event and – if interested – they could go to the specific place where it was happening. The app offered suggestions of numerous smaller or larger scale events, it also featured certain variable components which were only available in the electronic form. Cyclic events were grouped in a way that made it easy to see when the next one was going to take place (Fig. 7)

Figures 1, 2 y 3. Screenshots of application Expo Milano Official App



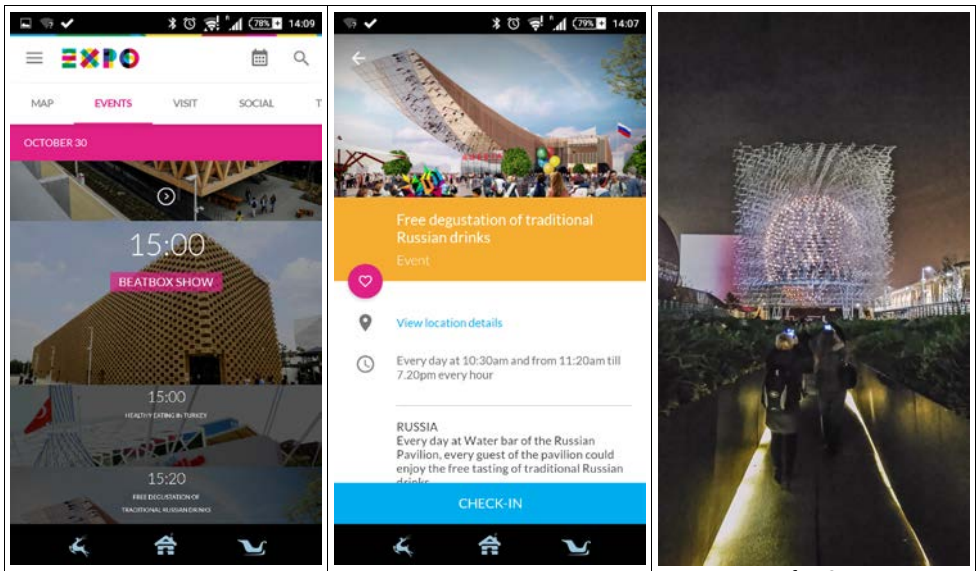
Source: Smartphone screenshots of application Expo Milano Official App

Figures 4, 5, 6. Screenshots of application Expo Milano Official App



Source: Smartphone screenshots of application Expo Milano Official App

Figures 7, 8. Screenshots of the application. Figures 9 The UK Pavilion



Source: Smartphone screenshots of application Expo Milano Official App, fig. 9 photo taken by the author with his smartphone

Summing up my experiences with using the application, I would like to highlight the usefulness of this solution, which made the progress of my visit to the Expo much more efficient. I was able, for example, to change plans quickly to take part in an interesting event taking place nearby, because I had instant access to the information about it. I saved a lot of energy, as I did not have to cover excessive number of kilometres unnecessarily walking the Expo area. An indisputable advantage is having all the information on just one device, without needless flyers, which is also relevant in the context of thinking seriously about sustainable environment. On the other hand, though, it should be mentioned here that using the app shortens considerably the working time of the smartphone, which may not be forgotten.

As a user, I would like more such applications – helping pedestrian participants in events to navigate their way – to be developed. I can responsibly state that for me using the Expo Milano Official App software was like prosthesis, extension of access to information and assistance in many situations.

Efficiency

Novelties in the world of electronics and media, flooding the market incessantly, are developed following the market rules, i.e. somebody must pay for them to be created. They may contain advertisements or have no such content. It sometimes happens, however, that some individual people driven just by their passion create such solutions at a very low cost. All these paths lead

to one thing – usefulness. We may only assess whether certain solutions are useful or not if we consider them in the context of a given situation and a specific user. There are also concerns that we will transfer too large a section of our real lives into the digital zone. Coming back to Marshall McLuhan's theory, we could introduce the concept of the prosthesis quality and evaluate it along the adopted criteria. Today, we may use virtual guides and thus experience spaces or sightsee in cities in a totally new fashion. Observing the current technological progress, we may predict an extensive and dynamic growth in this field in the future, especially when it comes to combining the real and virtual worlds, both in the micro- and macro-scale, in relation to the user, closer or more distant space, panoramas, regions or even the whole globe.

Proficiency or Addiction

A few months ago I was watching a group of young people of about 15 years of age as they met. All of them said hallo to one another and then, standing in a circle, they turned their eyes back to their own *worlds* enclosed in the large screens of their telephones. They were totally engrossed in these worlds, while at the same time not quite consciously participated in a kind of pseudo-conversation, giving only a small part of their attention to the not very attractive meeting they were having with their friends in reality. Is it giving up on real life, an addiction they are not aware of or a temporary excessive relish in using the showy technology? Is it just a creation of an illusionary life to run away from the grey and mundane reality or maybe a reaction to the world because it does not quite fulfils our expectations? At present, young people only want to do things which will be appreciated by a larger or smaller community. Having at hand a mobile device that enables sending a photo or a film to the internet network and social portals, we may see almost in an instant whether the actions we have documented find interest or recognition in our circle. Time will tell which road we will take and how we will use technology to shape reality in the future.

The article is a contribution to the discussion on the development of digital media, which are now a part of our daily lives. I would like to put forward the question whether technology leads to social exclusion or, on the contrary, offers a new type of trans-community contacts? We see a growing role of social media, which have now become a large part of our daily reality. On the one hand, it could be said that media destroy what has been once developed. On the other hand, if we treat them as a tool, they may also help to build a *new* society. We are living at the times in which initiatives created at the grass-roots level are growing in significance, and therefore this is where we should be looking for development trends in the years to come.

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