Interdisciplinary Contexts of Special Pedagogy
NUMBER 23/2018

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Digital Communicators – creators or imitators?

ABSTRACT: Mirosław Wobalis, *Digital Communicators – creators or imitators?,* Interdisciplinary Contexts of Special Pedagogy, No. 23, Poznań 2018. Pp. 117–133. Adam Mickiewicz University Press. ISSN 2300-391X. DOI: https://doi.org/10.14746/ikps.2018.23.07

The article touches upon the issue of influence of modern digital media on the attitudes of recipients/ broadcasters (digital communicators) related to their creative activities. The first indication applies to the fact that the development of digital technologies introduces a new digital order of communication (from the primary order, through the secondary and hybrid order, to the digital order), which in turn provides communicators with a broad spectrum of new methods and tools of communication 0 including tools permitting creative activities. Second of all, it is noted that despite the mentioned rich offer of digital tools and the promotion of creative attitudes, digital media, in particular global social media, are dominated by attitudes of re-production related both to common re-distribution of existing content (sharing, copying and pasting, etc.), and even limiting creativity entirely (likes, tags). The remarks made are compared to opinions of digital media researchers and neurobiologists indicating on the one hand the weakening/ dissolution of the reception of content by digital media (the negative effect of multi-tasking), and on the other hand, the supersaturation of emotions related to the reception of content (negative influence of computer games). In conclusion, attention is turned to the necessity of establishing in contemporary communicators (on all levels of education) of digital communication competences, in particular the promotion of creative attitudes related to these competences.

KEY WORDS: education, multimedia, culture, digital technologies, digital humanities, creativity

The specifics of communication complexity in the beginning of the 21st century influencing directly the creative attitudes of digital communicators[1] is related to the coexistence in everyday lives of two communication systems that are fundamental nowadays: the **analogue** system, related to communication practices and tools stemming from the original verbal and non-verbal audio-visual order executed interpersonally and indirectly with the use of analogue means, and the **digital** system, related exclusively to practices and tools stemming from the world of computer (digital) technologies. Both these orders or systems control and organise differently their related modes and forms of communication, whereby the differences are so fundamental that de facto the sole dominant form of communication (even if it is transitional according to the already-mentioned Kurzweil) between people[2] is **hybrid communication** entailing the continuous transition/ fusion of communicators between both these systems (an example of this „communication schizophrenia" is the simultaneous coexistence of persons, in particular so-called public figures, as physical beings and virtual media beings)[3].

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[1] I use the term 'digital communicator' to describe a person participating in the process of communication using new digital media, both as a sender/ broadcaster (active communicator) as well as a recipient (passive communicator), communicating both with other people as well as machines. The active digital communicator is also a person who consciously creates/ processes/ publishes digital content, and the passive digital communicator is a person that exclusively receives content published by other users of the net. In specific cases one may speak e. g. of responsive and non-responsive passive digital communicators – with the non-responsive recipient being for instance a passive viewer of a film played online, and the responsive recipient being a person, who actively participates in the screening (e. g. uses tools, scrolls, pauses, comments and evaluates with the use of the built-in tools, etc.).

[2] Even though it must be confessed that since their very beginnings, are trying to communicate with people in the analogue system, and in the reality of the 21st century, this communication is becoming more and more autonomous.

The language of new media, or creativity within the confines of code

Even if it is fairly simple to understand the economic sources of dynamic expansion of information technologies and new digital media, the explanation of social popularity of digital media resulting in their ubiquity and omnipresence in social and cultural life of the 21st century seems more difficult to explain. It suffices to say that over the course of no more than 20 years (from halfway through the 1990s until approx. 2015), digital technologies have completely remodelled contemporary popular culture, turning niche messages, typical for instance for comic books or computer games, into mainstream messages on a global scale, influencing the common cultural awareness. One of the simplest sources of this state of affairs hide in the mentioned economy (the digital change is just plain worth it[4]), but also in human nature: if something is cheap and simple (in terms of reception as well), then it quickly becomes popular and common, turning into a common good. Two fundamental laws are at work here: the first is the Gresham–Copernicus law, which states that bad money (e. g. cheaper to manufacture) drives out good money[5]. The second general law was summarised

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[3] Conf. M. Wobalis, *Hybrydowy podręcznik multimedialny narzędziem czytania tekstów kultury*, [in:] *Teksty kultury w szkole*, ed. by B. Myrdzik, L. Tymiakin, Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej, Lublin 2008, pp. 377–386. L.W. Zacher, *Refleksje o ideologii cyfrowego świata*, [in:] L.W. Zacher, *Nasza cyfrowa przyszłość. Nadzieje – ryzyka – znaki zapytania*, Komitet Prognoz „Polska 2000 Plus" przy Prezydium PAN, Warszawa 2012, p. 115; S. Puppel, *The human communication orders and the principle of natural language sustainability*, „Oikeios Logos" 2012, no. 9, pp. 9–10. http://www.keko.amu.edu.pl/sites/default/files/oikeios_logos_nr9.pdf, accessed on: 17.08.2018.

[4] One of thousands of examples of the reduction of costs through the digital revolution can be the process of upgrades of technologies of film playback in cinemas, from expensive (and dangerous) of celluloid tape to radically cheaper and safer digital carriers.

[5] This law also encompasses the storage of „higher" culture. https://en.wikipedia.org/wiki/Gresham–Copernicus_law.

in the Polish film „The Cruise" (Pl. Rejs) by director Marek Piwowski in the words of engineer Mamoń, stating that we prefer most these songs (or, such cultural content) that we already know[6]. Both these laws have fundamental importance for the understanding of 21st century converted culture, to which for the purposes of this paper I will refer to as a **culture of imitation**[7]. What once seemed niche and local, becomes common and global contemporarily; what was enjoyed by a narrow group, becomes [a] mass [phenomenon] thanks to the Internet (frequently ignoring aesthetic, ethical or legal criteria). As we will show in a moment, of fundamental importance for the immediate and global spread of digital culture are primarily the sole specifics of structure of the language of new media and the close relationship of the digital message with the technological carrier.

The fundamental structural material of each digital message is the bit, as the smallest information unit, which for one does not have a physical form, but additionally solely determines the status of electric voltage in a closed electronic circuit. Beginning with the 1950s, thanks to Claude Shannon, we are hence able to determine both the mode of virtual „connection" of individual bits into larger pieces of information, their transmission through various connections, and, finally, their transformation into algorithmically simplified (compressed) structures according to the rules of information entropy. Irrespective, however, from the entire technological entourage of digital communication, what constitutes the existence of a digital being is exclusively this status of electric voltage indicated above: this voltage either is (1) or isn't there (0). At the same time, each more complex form of information, being an image, sound,

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[6] „Dear sir, I have an exact mind. I like melodies that I have already heard once. Just like that. Well… now… through… well, reminiscence. Indeed, how can I like a song that I am only hearing for the first time". [Online, in the original Polish:] https://pl.wikiquote.org/wiki/Rejs, accessed on: 03.09.2018.

[7] Imitation: 1. The act of imitating. 2. A copy or simulation; something that is not the real thing. Online: https://en.wiktionary.org/wiki/imitation, Accessed on: 03.09.2018.

text, film, computer game, contains in itself this very ingredient – 0 or 1, in a form multiplied by a code suitable for that form. The bit, perceived metaphorically, is hence to the digital world what the simplest particle is for the physical world – the difference, however, entails the fact that the first is exclusively a virtual state, with the other always being a material construct composed of two or more atoms. The above remark, concerning the physicality of a material being, seems necessary to understand the most significant limitations of the digital environment, in which contemporary digital communication practices (including creative ones) occur. Indeed, the environment is always: a) **virtual** – it „exists" within the space of an electronic device, and is only accessible through a device of this kind, b) **technological** – it „exists" exclusively through devices using infrastructure based on electric technologies, c) **conventional** – the sensory representation of a virtual being perceived by man is always dependent on the transmitting tool, hence, it may take different forms for different recipients, d) **closed** – the message is always limited by the capabilities of the devices and the assumptions of the encoded algorithm. Furthermore, each communicative form of action in such a limited environment will possess the following two fundamental inherent flaws: one will stem from the necessity of full immersion in just one environment (it is impossible to fuse a bit and a particle, and it is impossible to be analogue and digital at once), the second will stem from the necessity of usage of completely different tools of navigation in the relevant space (digital reality cannot be transferred into the material world without the usage of technologies depending on electric current).

Listed were the general limitations of the communication space of the recipient/ creator as part of digital reality. Further ones stem from the structure of the digital message itself, a topic, on which e. g. Lev Manovich extensively wrote about. The author of *The Language of New Media*[8] had distinguished between five rules that cha-

[8] Manovich L., *Język nowych mediów*, Oficyna Wydawnicza Łośgraf, Warszawa 2012.

racterise/ describe new digital media: numerical representation, modularity, variability, automation and cultural transcoding. Each property of new media – if we look at them from the standpoint of their influence on creative attitudes – plays an important role for the emergence and the forms of execution of digital creative practices.

The constitutive rules of the language of new media as described by Manovich have their source in their numerical representation, hence, the digital nature of the message as described above. The numerical message, irrespective of whether it emerged directly within the digital tool or whether it was transferred to this tool through digitalisation, will always describe the world using a language of bits and nothing else. Considering the fact that each object of new media (text, images, sounds, videos) can be described mathematically in machine code, it can very simply be algorithmically processed by any sort of digital computational device. the most frequent processes of this kind are e. g. automatic contrast or colour saturation corrections for photographs, automatic volume changes, changes to film playback speeds, font sizes.[9]

An important property of new media stemming directly from the numerical representation is their modularity, describing the phenomenon of construction of the message of portions independent of each other, which are composed of further groups of other independent parts, down to the level of indivisible components of a digital message (e. g. the pixels of an image). Such a message structure makes for the fact that it is very easy to interfere (transform, remove, alter) in the area of the individual components of a message, without influencing the structure of the whole. Modula-

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[9] Conf. Negroponte N., *Cyfrowe życie. Jak się odnaleźć w świecie komputerów*, Książka i Wiedza, Warszawa 1997. Presently, we are able to store digitised copies of analogue information stored on different carriers from a few to even several hundred years, without any loss. Conf. Bliski T., *Pamięć nośniki i systemy przechowywania danych*, WNT, Warszawa 2008, Witczak D., Sobkowiak K., *Problemy przechowywania danych cyfrowych w bibliotekach*, „Elektroniczne czasopismo Biblioteki Głównej Uniwersytetu Pedagogicznego w Krakowie", 2014 no. 5. {Online:] http://www.bg.up.krakow.pl/newbie/index.php/bie/article/viewFile/70/69. Accessed on: 20.06.2017.

rity is experienced most frequently in digital photo editing (error removal, image correction), in advertising, in digital art. Due to the fact that there exist dozens of applications permitting such modes of editing, this is also a very popular mode of quickly expressing opinions in the form of images (so-called „memes"). In music, modularity is responsible for enabling creators to freely mix and re-mix audio tracks. In recording studios and professional film laboratories, it becomes possible thanks to modularity to digitally repair, clean (re-master) damaged or destroyed analogue recordings or films[10].

A further property of new media that is important from the standpoint of media creativity is their variability. This describes the multitude of possible creatable versions of a digital object, irrespective of its format, size or content. As Manovich says, no digital object is something that is determined once and for all – it can always exist in many versions that are different from each other, or variations. The multiplication of versions is an operation that is by definition uniquely simple for computer devices (as it is machine-based) and it entails the multiplication of components of code. In this context, the number of copies, versions, variants can theoretically be unlimited[11].

The properties of new digital media described above tie in perfectly the possibility of machine automation, thanks to which each activity related to any interference in code (creation, processing, distribution of code) can be supported through full automation (e. g. low-level [activities] managed by application functions), limited only by the technical capabilities of the device. Thanks to automation and thanks to a suitably designed algorithm, the computer programme, through the power of computer technology, is able to independently execute, instead of man, numerous activities according to a pre-determined schematic, e. g. image sharpening, removal of 'noise' in a sound track, overlaying of filters, effects, etc.

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[10] Manovich L., *Język nowych mediów…,* pp. 95–97.

[11] Manovich L., *Język nowych mediów…*, pp. 102–114.

A machine/ computer programme may also work in this way, being able to create art forms instead of man – such a machine can independently collect data (e. g. according to a favourite colour or topic) and transform images/ sounds/ texts, creating entirely new variations. Such a programme really exists, and is named (quite symbolically) the „Painting Fool". It was created by Simon Colton in the year 2006 and its „artistic work" entails taking patterns/ ideas/ inspirations from the Internet and creating their imitations (using a suitable algorithm). In most cases, however, the „Painting Fool" randomly creates collages, abstract images or diverse visual creations imitating real art[12]. Created were also a few graphics robots, referred to by their creators as „artists", the creative process in which most frequently entails the mechanical creation of a drawing/ picture from a supplied pattern or camera image[13].

The last important property of digital media, and the most interesting one from the point of view of digital humanism, is (cultural) transcoding, referred to by Manovich as a deeper form of automation and variability[14]. The author of *The Language of New Media* notes that computerisation had divided media into a purely digital area and the real cultural area existing directly beside it (but also together with it). Considering the fact that digital cultural texts may easily be copied, multiplied, distributed and archived, they very quickly become a solid and living context for traditional (analogue) culture.

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[12] It is presently possible to automate many complex (multi-stage, hence, multilevel) activities, such as automatic control of cars, planes (permitting not only flights from point 'a' to point 'b' but also taking off and landing), industrial equipment (self-managing robots). Issues related to robotics, in particular to the creation of autonomous robots (e. g. self-driving cars) are broadly commented on in the latter, and examples of solutions (e. g. cars tested by the company Google) indicate that such products and services have a chance at becoming the everyday reality within the next few years. Conf. Jezierski E., *Dynamika robotów*, Wydawnictwo Naukowo – Techniczne, Warszawa 2006, Ulatowski W., *Sterowanie ruchem autonomicznie sterowanych pojazdów*, „Pomiary Automatyka Robotyka" 2004 no. 1.

[13] *Robot artystą?* „Blog wiedzy o nowych technologiach", [Online:] http://www.blogotech.eu/index.php/1503-robot-artysta [accessed: 3.09.2018].

[14] Manovich L., *Język nowych mediów*…, pp. 114–118.

Both spaces influence each other, as a result of which, a new digital culture emerges, being a mix of human and computer-based meanings.

Creative work within the area of new media is simple, easy and commonly available, and the smartphone in the pocket of 2018's teenager is a 1990s multi-million-dollar supercomputer able to automate the majority of basic activities related to, among others, editing media. Changing a photo made using a camera into its version imitating a charcoal drawing, transforming the image of a landscape into an impressionist painting, slowing down a fast-paced music track or removing the vocals, cleaning up an old photograph or removing visible technical flaws, the fusion of several short films into a longer one, including a title and captions – these activities are very simple and can be done in most cases 'on the fly' by an experienced cellular phone user. In addition, a 'work' 'created' I this way may be published and promoted right after it is created, using further digital tools available on the Internet.

So, in the context of the above musings, who is the author in the world of new media? A programmer? A modifier? A re-creator? An imitator? Or maybe exclusively a skilled operator of digital tools?

Information overload, or the sleeping brain

The influence of the poly-sensory/ multimedia message on the perception of their recipients was already the topic of hundreds, if not thousands of books, articles, papers from various areas of science (from neurobiology to applied linguistics and cultural science). Thanks to this, we now know pretty well that the influence of the multimedia message on perception is strong, significant, and that it leaves a permanent mark in the mind of the recipient. For years as well we have been dealing with the term '**information overload'** as introduced by Alvin Toffler already in the 1970s, referring to the condition, in which an excess (diversity) of information transferred simultaneously significantly impedes the reception of the conveyed

message[15]. Manfred Spitzer had devoted a separate chapter of the book *Learning: The Human Brain and the School of Life* to so-called **selective attention** (being one of the effects of information overload), writing: „Selective attention has at its disposal a specific and limited capacity to process information, which is directed at incoming tasks. The more capacity is reserved for a specific task, the more does it occur at a cost for other tasks."[16] This information should be paired with the fact that the human brain not only functions in full autonomy (e. g. one cannot use 'will power' to order the brain to focus on just one piece of information), but in addition it is very economical, not to say thrifty (or even stingy) when it comes to making use of energy. So, if a particular mental task is too time-/ work consuming/ or boring/ tiring for the brain, then it will simply cease handling it. This phenomenon, and in particular the effects of overload influencing so-called superficiality of reception of digital content (e. g. when viewing websites) was described extensively by Nicholas Carr (*The Shallows: What the Internet Is Doing to Our Brains*), Gary Small and Gigi Vorgan (*iBrain: Surviving the Technological Alteration of the Modern Mind*), as well as the already mentioned Manfred Spitzer in his book *Digital Dementia.* Carr notes: „Dozens of studies by psychologists, neurobiologists, paedagogues or website designers all lead to the same conclusion: when we go on-line, we enter an environment that encourages skimming instead of reading, chaotic thinking and superficial learning. Of course, one may ponder deeply when surfing the Internet, just like one can remain on the surface when reading a book. However, this is not a mode of thinking that is supported and rewarded by the discussed technology."[17]

On the other hand, the quoted neurobiologists (Spitzer in particular), and specifically neuro-didacticians (with the conclusions of

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[15] A. Toffler, *Future Shock*, Bantam Books, 1970.

[16] M. Spitzer, *Jak uczy się mózg*, Wydawnictwo Naukowe PWN, Warszawa 2012, p. 113.

[17] N. Carr, *Płytki umysł. Jak Internet wpływa na nasz mózg*, Helion, Gliwice 2010, pp. 145–146.

Marzena Żylińska[18] noteworthy in terms of Polish literature) rightly point to the fact that contemporary generations of digital communicators are so specialised in the reception of digital media that the process of reception of complex messages (so-called. „multitasking", or the simultaneous active browsing of websites, listening to music and writing text messages) is so natural for them that is does not constitute any particular attraction for their brains – so, in order to become excited, they either need a much stronger stimulus, or there may arise the risk that their brains will „fall asleep". The ability to efficiently receive many messages at once, including the simultaneous usage of some of them, has become for a group of researchers (among them Gary Small, Gigi Vorgan) the basis to believe (somewhat controversially in view of certain researchers) that in the process of evolution of the brain, a significant change had occurred permitting the naming of new generations raised in the world of digital media as the digital generation that significantly differs from older, analogue generations (Prensky had described this divide in the year 2001 as „*digital natives*" and „*digital immigrants*"[19]). Among brain researchers, this 'active' clicking (there is even talk of a culture of zapping) has furious opponents, because in the long term, it leads to weakening of stimuli and superficiality of message reception (the eye moves quickly from one piece of information to the next)[20]. In this context, noted must be one simple fact – didactic tools entailing for the most part 'clicking' operations are not primarily tools serving efficient acquisition of information and learning, but learning efficient (even masterful) clicking.

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[18] M. Żylińska, *Neurodydaktyka, Nauczanie i uczenie się przyjazne mózgowi*, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, Toruń 2013.

[19] Prensky M., *Digital Natives, Digital Immigrants* [in:] *On the Horizon*, Vol. 9, No. 5, MCB University Press, Bradford 2001. [Online:] http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf [accessed: 17.01.2017].

[20] Conf. A. Zając, *Uczenie się w sieci przez zapping*, „Neodidagmata" 2011, 31/32, pp. 109–126.

Within the topic mentioned in this context, it is worth it to take a closer look at how the digital message influences primarily the media creativity of recipients (in particular young ones), and in what way the digital model of communication executed using multi-media tools, and social media in particular, creates or stimulates such attitudes.

One of the more interesting analyses of the influence of new media on the young recipient is provided by Jadwiga Izdebska in the article *Multimedia zagrażające współczesnemu dziecku* (Pl. Multimedia as a threat to the contemporary child), focusing mainly on the influence of media on the efficiency of brains (omitting hearing, however), in particular the emotional and psychological condition of the recipient – and these areas, as is well known, are particularly important to the willingness/ need to express/ provide creative work.

Table 1. The wrong influence of the computer and the Internet on a child[21]

Categories	Symptoms
Health	Illnesses: of the eyes, the skeletal system, the nervous system; allergies
Communication using the Internet	Shallowed, short signals, a language of abbreviations, a limited range of signals
Behaviour	Behaviour: aggressive, arrogant, vulgar, conflict-provoking
Emotions	Fears, nightmares, feelings of fright, overexcitement, indifference to evil, aggression, harm
Reduction of time for:	Direct social contacts, school learning, house duties, family duties, family contacts, discussions, physical activity, sport, readership, other forms of participation in higher culture
Brain/ the mental sphere	Cognitive relativism, ethical relativism, intellectual passivity and laziness, removal of the difference between reality and fiction, removal of the differences between law and lawlessness, disadvantageous changes to vocabulary
Making contacts with the inappropriate people	paedophiles, homosexuals, gangs, sects

[21] Izdebska J., *Multimedia zagrażające współczesnemu dziecku,* W: Izdebska J., Sosnowski T., *Dziecko i media elektroniczne – nowy wymiar dzieciństwa. Komputer i Internet w życiu dziecka i obraz jego dzieciństwa*, vol. 2, Białystok 2005, p. 108.

The creator/ re-creator in a culture of imitation

The information overload, as well as the selectivity and superficiality of reception of information, also significantly influences the interference of the well-being of digital communicators, and at the same time, the execution of creative attitudes. These, being much more tiring for brains overloaded with multimedia, are replaced by much simpler and less demanding **imitatory activities**. In this regard, significant „aid" for overloaded brains, as indicated by the already-quoted Nicholas Carr, is found in the form of digital information tools that focus on options related to the processing and distribution of existing messages (edit/share/like) rather than the cumbersome and time-consuming creation of these from scratch. As we were able to show in the second part, new digital media, by their very digital nature, are messages limited by capabilities of the digital code that constitutes them. To say it simply – thanks to digital tools, we are only able to create what was assumed at the time they were produced (e. g. when the functions of a device or a software programme were created), and exclusively within the space of activities described within the code. Hence, if the device or software does not have a function that would interest the creator, they have to search for a further tool or (and in most cases due to lack of time, lack of engagement, talent, computer skills) be limited to the functions available at hand. In this manner, Facebook becomes a graphics tool, and the montage of a film to be viewed by millions of viewers can be completed with a smart phone application. However, irrespective of the number of available functions of devices and software, the digital creator will always be limited by the space of the code and the lack of possibility of transgressing the selected system of communication. As we mentioned earlier, the language of new digital media is constituted by properties entailing copying and transforming the existing message using existing computer tools [rather than] the creation of completely new content. Existing digital tools related to creating (e. g. drawing software, digital musical instruments, digital cameras and camcorders) are provided

with so many automatic functions that already at the stage of creation of new works, it is de facto created either following a patter or through a pattern permitting the modification of an existing work. In other words – it is simpler and easier to create „something new" from an existing source (e. g. a template) than creating (e. g. with a painting application) an original work. It is simpler and easier to transform an existing „meme" than create and promote a completely new one, and each of these imitations is a further digital variation of the original, as described by Manovich.

It is worth noting that the creation of imitations ceased to be perceived as a flaw, shortcoming or lack of creativity in the contemporary culture of convergence. Exactly the opposite is happening – something that is similar to other popular messages is rising as a value, and thanks to efficient imitation, the author/ re-creator/ imitator may boast good knowledge of the current cultural code. Apt observers of social media note the flow of digital media fashions that follow one another, being able to easily identify and classify them – also thanks to computer tools themselves, which efficiently classify the most popular messages (top 100 YouTube films, most popular Facebook sites, most eagerly watched Instagram accounts, etc.). The decisive majority of social tools support imitation work offering tools akin to „like/dislike", permitting not only references by the communicator to the received content, but primarily the classification of messages that are liked or disliked. Instead of a text comment to a photograph, suggested is marking of persons with the click of a mouse, and instead of the expression of emotions, the tool offers a range of ready emoticons showing joy, sadness, anger, etc. Ever clearer is becoming the tendency of social media site operators to depart from the establishment of individual messages requiring complex writing skills (e. g. the creation of subordinate-clause compound sentences), a good example of which is the imposition on communicators of e. g. a limit of the characters (letters) that they may include in a message.

A further noteworthy tool supporting imitatory work is the option of sharing/ resharing, permitting the redistribution of the most popu-

lar messages instead of more complex commenting/ recommending one's favourite messages. The sharing of a message is treated as recommending it to other communicators, and, thus, the accession by the person sharing to the network of official and unofficial distributors of digital messages. At the same time, the culture of imitation exhibits repetitive phenomena of emergence of short-term media stars, achieving within a short time seven-digit indicators of not only viewers, but re-distributors, and, to follow, imitators. In a digital culture of imitation thus perceived, a significant role is played by novelty (or the freshness of a message) and its popularity, frequently achieved by the simplest/ most primitive means, e. g. through controversy or conscious reference to other popular messages. A minor role is played not only by aesthetic quality, innovation or legal requirements, but even the technical quality of the message.

Since the time of dynamic development of digital media (towards the end of the 1990s, among others, [the original file-sharing site] Napster, followed by the BitTorrent protocol-based sites), and then social media and streaming file sites (MySpace, YouTube, Spotify, [the recent music streaming service] Napster, etc.) noticeable is the contesting or even questioning of the reasonability of restrictive care for copyrights on materials made available in the global network. Some more radical users of the net believe in the right of every user of the net to freely use any content in any way. Public perception and the reality of the culture of imitation has this approach not only resulting in work not only entailing the „appropriation" of particularly popular names or even images found in the global network. In this way, the creator living in the real world consciously and willingly becomes a virtual being described by their digital nick and avatar.

Looking for creativity

In a situation of so common availability of digital tools, and under conditions of so strongly globalised digital media culture (in addition, as we have attempted to show, being a culture based on imita-

tion), it is uncommonly difficult to estimate any sort of vision of the future with respect to creative attitudes. Despite this, one may venture to formulate some conclusions that are somewhat general and which transgress technological limitations, which are always variable.

First of all, contemporary technological reality is a transitional state, and the direction of further development of digital tools is difficult to estimate. The interfaces presently used for communication between man and machine are entirely outdated. The keyboard has over 100 years, the computer mouse is just fifty years younger, computer monitors – or rather the lifestyle that they force – are responsible for a growing group of diseases of affluence. What will the interfaces of the future look like? They will certainly be different than the ones of today, and the tendencies of their development and the most recent trends indicate that the management of devices will grow ever closer to natural forms of communication of man, covering, among others, the possibility of direct communication of man with machine through senses.

Irrespective of the direction, in which the continued development of technology will go, the competences that will distinguish man against the machines of the future will be the ability to think creatively/ critically and complex, multi-level communication competences, spanning not only historic mods of communication (speech, written words, non-verbal communication), but also empathy, intuition and the tendency to take risks. Decidedly retreat in turn will all those competences that could be simulated by machines and the artificial intelligence managing them. In this view, the main stress of education in the coming years on all levels should be laid on the development of communication competences, related both to better communicating between people in the physical world, as well as the digital communication competences facilitating the communication of humans with virtual beings. Irrespective of the above, however – what will become most important is the development of competences permitting man to achieve an existential harmony, including the execution of creative attitudes and the achievement of well-being in life.

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