

# Literacies

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The article is a theoretical inquiry into the category of literacies. It is understood here as common cultural abilities and competences to communicate by the media that allows its users to maintain and build social imaginary and practices. In order to adapt this abstract category to the modern digital revolution, the article offers a distinction between analogue and digital media literacies and competences. Analogue media is linked with mass media and the mass communication era of analogue media such as books, television, radio and press. Digital media is still developing as our societies and cultural frameworks are dealing with new media, Internet, interfaces and new imaginary around them. It is here that theoretical propositions are confronted with digital media practices. The paper consists of three parts. In the first part, the concept map and definitions of the categories of communicative competences and literacies are presented. In the second part, the author analyses two interpenetrating media cultures with overlapping technological media: analogue and digital, and the literacies: Gutenberg's and network-digital coupled with them. In the third part, the article focuses on the selected elements of this interpenetration: a clash between the traditional hardware and the new order of interfaces and software, visual culture and post-media entities, and on the competition between the logic of "reading" and "writing" the media. The discussion in this part is summed up with the analysis of the hybrid format of info-aesthetics.

*Keywords:* literacy, media, digital culture, technology, postmedia.

## 1. Culture, knowledge and technology

The category of the *culture of knowledge* — which seems to be one of the possible ways to interpret literacy as a theoretical term — seems to be open and susceptible of numerous possible interpretations [Celiński & Hudzik 2012]<sup>1</sup>. I am interested in this meaning of the term which refers from the autonomous status of *knowledge* and *culture* to *technology*, not expressed in this juxtaposition straightforwardly but regulating the ontologies of both these spheres individually. So the culture of knowledge describes the ways in which we use knowledge, we adapt it to solve the problems and to design objects and our cultural surroundings. Among those media are the most important. Cultural energy of knowledge and objects, whose unprecedented momentum in the modern era took a form of industrialization, urbanization and mediatization, emancipated from the traditional cultural determinants, launched a number of radical changes in culture and social life.

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<sup>1</sup> I'm referring to the title of the book I coedited in Polish where the category was introduced and defined. This paper was originally published in it.

The article is focused on the process of culture mediatization, that is the cultural logic of using communication technologies — the media. Nowadays, the communication mediated by them is situated in the centre of cultural events. The forms regulating this communication, the meanings and habits associated with them, prove to be the model according to which we delineate other cultural acts and understand ourselves. The media teach us how to perceive the world, how to think, exist and act within it. Imitating them, we broadcast and receive, process and calculate the reality and ourselves. In the course of time, we accept the *program* (Vilem Flusser's notion) encoded in the media as our own, we become uncritical towards them, and our thinking, language and sensitivity turn into a continuation of their functioning.

I consider media technologies to be the most important for the contemporary relationships between *culture* and *knowledge* and between *culture* and *technology*. I understand *culture of knowledge* as an interconnection between culture of technology and knowledge of it. To be precise, the media and the communicative grammars encoded in them turn out to be a bridge between the emancipated world of technology and science (along with the industrial dominium behind them) and social traditions with cultural practices. The modern space of technologically mediated communication is one of the most reliable testing grounds and investment fields of the *technopoly* triumphing over the traditional culture, and at the same time one of the most fluctuant and fertile culture-creating grounds, the most important of the contemporary communication spheres.

Out of the vast universe of the media entities, I select for the purposes of this analysis a special kind of technological solutions: digital media and the accompanying communication networks. They set a new quality of technology itself, its digitality and network paradigm, and, as a result, also a new social and cultural configuration of the media, the scope of which is described by such notions as e.g.: *information revolution*, *network society* or *participatory culture*. Along with the *new media*, a new culture is born and new qualities are emerging in the social life.

Despite these affiliations, the current automatic, cybernetic and networked media machines, together with the cultural trajectories delineated by them, are entangled in a paradox. On the one hand, the *new media* are the most perfect instruments of the enlightened and emancipated science which has searched for the universal order of things (*mathesis universalis*) and the corresponding rational and objective method of its construction already since the Renaissance period. Along with the experiments of the Renaissance painters, sculptors and architects with the geometric perspective and the search for the “golden proportions,” the process of the autonomic development of knowledge and technology commenced, as well as their departure both from the holistic culture and the centuries-long tradition of handicraft *techne*. The emancipation of science, enhanced by the *industrial revolution* and *modernity* arising at that time, made technology — rooted in knowledge acquired with the “scientific method” — the most important instrument of the civilization-based transformation of the world. Rejection of the cultural limitations and stimulation of the modern emancipation project became the joint mission of technology and science. The fate of the *new media* is — if we adopt this line of thinking — the most historically significant testimony to the causative force of the emancipated science and technology, a spectacular victory of modernity over the chaos of nature and immaturity of the old culture.

On the other hand, the contemporary popularization of the *new media* and networks opened them to the social control and cultural regulations on an unprecedented level.

No other modern technological languages have proved to be so open and susceptible of change in their own structure introduced by their users. The technological nature of the *new media* made their political and social decoding possible and opened them to continuous remixing and hacking. This was done by the forces of market and science, and primarily by the cultural practices of average users. As a result, the *technopoly*, which gave rise to this project, is just one of the forces able to influence the shape of the digital-network project nowadays. Consequently, the *new media* today are a wide-ranging social and cultural project which has delineated the reconstruction of meaning and status of technology as a whole: in people's hands the *new media* become a tool of the social and cultural change which falls outside the planned and centrally regulated ideological and technocratic scenarios. It is possible to indicate at least a few episodes and processes in this sphere: it happened together with the demystification / aestheticization of the *new media* (a strategy of lately deceased Steve Jobs and the Apple company headed by him), creating and sharing user-friendly *interfaces* written according to the most traditional (iconic and textual) culture codes (graphic interfaces), or transfer of the network infrastructure outside the military control and construction of the multidimensional and socially regulated Internet (social media, Internet 2.0). The traditionally understood culture, which despite the achievements of the enlightened emancipation is still genetically inscribed in the sensitivities, myths, gestures and daily strategies of ordinary users of the *new media*, returns together with them into the territory of science and technology. Thus, along with the machines of modern technology and science, independent of the determinants of this culture, the cultural and social "re-conquest" is going on. This return and the social logic of using new media technologies, conducive to it, have initiated one of the most important and far-reaching changes in the contemporary times concerning the relationships among culture, society, knowledge and technology; a change which is paradoxical from the perspective of the modern association between the development of technologies and the technocratic control over them. The new media and networks are today the space of the cultural and social regulations which must be taken into account by the logic of modern knowledge and technology.

### *Communicative competences and literacies*

In the light of this paradoxical trajectory of digitality and the network paradigm within the framework of the modernity project, the aforementioned mechanism of the interconnection between culture and technology is especially significant. For the purposes of the discourse of the humanities and the social sciences, this mechanism can be outlined from a constructivist perspective. Its meaning consists in acknowledgement of the significance of the cultural "genes" of technology which are evolving on the ground of certain sensitivity and socio-cultural needs. It has a reverse dimension, too. The technologies to which we offer a place in culture, expecting their full obedience and compliance with our ideas and supervision, begin to grow, get independent and live their own life not subordinate to supervision or control. When they are liberated, they release not only the energy they were supplied with at the time of their construction, but they also reveal their own programs and causative forces, and change the world and us according to them. *Homo communicans* faces the permanent interconnection: creates technologies and is simultaneously shaped

by them. Having entered culture, the socialized and culturalized media made it subject to the force feedback of mediatization, technological reprogramming and updating.

The communicative competences and the media imagination regulating them are placed in the centre of the interconnection between culture and its technical products. It is an intimate but also cultural and social resort to which we refer more or less consciously when we are constructing our own identity. It is here where the effects of the interpenetration of technology and culture draw energy from and find their first reference. I consider these imaginative resources of knowledge about the world and the resultant culture of being and acting to be the most important “power supply” whose energy regulates the cultural and social fate of the new technologies and defines the meanings given to them. Their representations in the discourse of the humanities and the social sciences are the notions of *collective imagination* and *literacies*. By means of them I would like to delve under the surface of the current, extremely dynamic episodes in the cultural being of the *new media*, such as consequences and convergence of interfaces, evolution and dominance of software, marketing mythologies or Internet 1.0, 2.0, 3.0. Under this seething surface of the media daily life, there are radical tectonic movements going on. This is the place where the cultural orders of traditional and digital technologies are clashing, along with our ideas about them and the *literacies* catalyzing their fate.

The theoretical context for the categories referred here appeared in the humanities and the social sciences as a result of the *linguistic turn* which directed the cognitive activity from studying the hard, traditional facts and objects of life into the linguistic space in which beings and processes have symbolical meanings. The most eminent sociologists, communicationologists and anthropologists understand the present time in this spirit. In the understanding of Pierre Bourdieu, one of the most famous and renowned sociologists of the present time, the *collective imagination* consists of the relations of individual *habitus*, that is the internalized structures of knowledge, and a number of notional and practical dispositions dependent on them, which we use as the foundations for thinking and acting [Bourdieu 2015]. Charles Taylor, a Canadian cultural sociologist, uses the term of *social imaginaries* to describe the social self-knowledge accompanying modern morality and the resultant practices, perspectives and expectations which are seldom expressed directly and constitute a kind of shared images and references forming a community and shaping the collective life [Taylor 2004]. On the other hand, Arjun Appadurai, one of the most frequently quoted anthropologists dealing with the category of globalization, points to the presence and interpenetration of the constituent spheres of the collective imagination [Appadurai 2010]. These are the global “landscapes”: media-based, technological, ethnical, financial and ideological. In their mutual interpenetration, the social and cultural knowledge of modern societies is developing and consolidating. For users of this knowledge they have primarily the imaginative and then the material character. They serve as symbolic structural constructs establishing the points of reference in the individual construction of the world's images. The image of collective awareness, with the imagination and socio-cultural knowledge supporting it, emerging from these anthropological and sociological notions would be incomplete if I did not inscribe in it the category of tacit knowledge, as well. This notion was introduced into the scientific discourse by Michael Polanyi inspired by Wittgenstein's works [Polanyi 2013]. Using this notion, he pointed to the concealed resources of knowledge and imagination which regulate our thinking and behaviour, but at the same time they are inaccessible directly, barely classifiable and not subject to rational evaluation and analyses.

The aforementioned notions provide an insight into the perspective of the humanities and the social sciences with respect to the area identified by me as sensitivity, imagination and communicative competences — *literacies*. Their precise description, as well as a reference to a number of notions not mentioned here is impossible due to obvious reasons. However, already on the basis of this preliminary diagnosis it is possible to notice the complex and multidimensional character of the problem areas behind these notions. Out of the biological (cognitive science and neurobiology) and at the same time anthropological and symbolic (semiotics) source, the sprouts of our reflection and communicative subjectivity are growing. This is knowledge about how we can communicate with each other and understand the world, individually internalized and constantly verified in the social life (sociology, media science, communicology), as well as a specific structure of communicative sensitivity resulting from continuous presence in the mediasphere and using its technologies — the media. These resources of knowledge and ways of operation based on it, deep and hardly accessible both to us, their disposers, and to any external logic of their reading and understanding (science, politics, economy), mostly not subject to rational verbalization and supervision, are the areas where technology has its most important anthropological and cultural basis. Its dynamics is merging and interpenetrating here with the biological nature of our humanity; our own individuality and personality — with the energy and potential drawn from the collective life, the community capital oriented towards co-understanding and co-creation of the environment. The connections and affiliations are made here, determining both technology itself and its socio-cultural basis and status, the unique culture of technology is born and knowledge technologies are emerging. *Literacies* are anthropological, cultural and social functional grammars of the media.

## 2. Media cultures

I have presented above a number of references to the area of communicative competences and *literacies*. Now I move on to the discussion of the interdependence between the technosphere split by the force of internal momentum, together with the media technology assigned to it, and the cultural communication domain mediatized by them. The reconstruction in the area of the individual and collective imagination and communicative sensitivities takes place in parallel to the splitting in the sphere of technology, is its consequence. Despite the interconnection, the pace of these dynamics is not the same. Technologies change much faster than literacies which describe them and make them familiar. Moreover, the contemporary experience of technology is connected not only with its growing civilization force. We are also, or perhaps primarily, witnesses to the birth of a new, digital-network media landscape, duplicating the traditional order of technology. Together with it, further fields of imagination and competences are born, new communication habitus not matching the existing ones.

It can be expected that the confrontation between the already existing and the new types of communicative competences emerging together with the *new media* will cause socio-cultural movements at least of the calibre of the technological breakthrough accompanied by them. For the first time in history of the relations between culture and technology, we experience a turn and a juxtaposition so tangible and condensed in form and time, when two technocultural orders, with the fundamental ontical differences between them, are overlapping. In these circumstances we have a unique chance to identify

and develop a critical distance towards them and, as a consequence, a chance for the critical discussion of the role and status of technology as a whole. For the time being, such an opportunity emerges and is used only in the most obvious and the simplest way. Both the scientific discourse which adopts the techno-utopian and techno-phobic perspectives and the corresponding social readings, suggested by techno-optimistic propagandists and techno-phobic prophets, are dominated by extreme scenarios. Adopting the rhetoric suggested by these heterogenizing discourses, we should acknowledge that the two great kinds of communication logic, two *literacies* and two media cultures: traditional analogue and newborn digital have faced each other. I will explore now in detail both the two media orders and the cultural changes accompanying them.

### *A. Two technological media orders*

Two technological (media) orders: analogue and digital, clash and coexist inseparably at the same time in the shared socio-cultural environment. The analogue order is the domain of traditional tools and machines, whereas the digital order covers this traditional layer with a coat of soft programming solutions whose role is the automatic organization of the hard structure's work. Together with this stratification into hardware and software, technology — monolithic in the ontic sense so far — has started a new chapter in its history, the course of which is delineated today primarily by the process of autonomization of what is soft in it from what is traditionally hard. Apart from tangible tools and machines (I conventionally call them analogue) which have accompanied culture since its beginnings, their intangible virtual layer has appeared, that is software. This is the key stage of the evolution from the traditional material artefacts towards post-material entities and states, taking a virtual form of barcode sequences. Their presence comes to the fore in the communication world today and overtakes hardware systematically and effectively in the practice of their everyday use. In order to realize the significance of this software turn, it is enough to take into account the number of actions we devote to software during our everyday contact with the cyberspace — from shifting virtual files among virtual catalogues to interface management or interactive games.

The effects of the multiplication of the “states of matter” of the technological world prove to be characteristic of the civilization status of this sphere and its relation with the world. Similarly to electricity which is the driving force behind it, the new layer of technology is a real phenomenon, but going beyond the organic abilities of the senses' perception and not fitting in the traditional anthropology of physicalness and sensuality. As a result, there are no ready-made cultural and social patterns which could be used to comprehend and become familiar with them. A civilization effort of societies and cultures, resembling that which used to be applied to electricity and to writing before that, is necessary. The most important events in the universal history of the digital world have centred around software. The development of software turns out to be the key regulator of the contemporary technological advancement. Its shape is no longer determined by consecutive projects of new equipment solutions as much as before, but by the stories encoded in such software projects as Linux, Google, Facebook, or Wikipedia. Lev Manovich, one of the most famous cyber media scientists, in one of his latest books [Manovich 2016] leaves no place for doubt: software takes command of the media world, just as mechanization took command of the technology area before [Giedion 2013].

As a result of this stratification, we can talk about soft and hard technologies, and more generally about the soft and hard layers of technology. The hard layer is situated inside the traditional order and is subject to its classical rules resulting from the traditional relationships: human-nature-culture. On the other hand, the soft layer has become something like meta-technology. It fulfils the role of an automated operating manual of traditional technology and/or languages and forms of control over the hard skeletons of machines by their users. Soft technologies are a coating with which the traditional frames of machines are covered in order to make them more friendly and comprehensible, and subject to control at the same time. This coating comprises also the cultural ideas about the meaning and role of material products, recorded in the form of a digital code, it is their culturization and anthropomorphization. Thus, the soft layer appears to be the most perfect achievement of the technological evolution, the significance of which consists in the functional self-steering and self-sufficiency of machines.

Apart from the dualism of the nature of digital technologies, described above, the technological turn has yet another aspect: the networking of digital machines, that is their connection within the framework of a de-hierarchical network infrastructure — Internet. Each machine connected in this way is functioning on equal terms within it, there are no presumed centres and peripheries there. Thus, the construction of the web enables communication that goes beyond the one-to-many model with no feedback, dominant so far in the mass communication implemented with analogue technologies. Instead of this model or actually parallel to it, as shown by the Internet practice, various alternative constructions are possible: one-to-one, many-to-many, together with any variants and combinations. The network paradigm changes not only the communication structure. The automatically networked and “artificially intelligent” machines are able to communicate with one another, supervised by software. Visionaries of network development are convinced that, along with the networks functioning nowadays and connecting people by means of digital machines, we will have the so-called Internet of Things in the near future. Its germ is antivirus software which downloads packs of the most recent definitions of viruses necessary for everyday functioning and reports threats encountered online, intelligent cars which can call for help on their own in case of emergency, or houses equipped with refined alarm systems which can call for security and block the rooms where burglars are.

### *B. The culture of mass consumption and the culture of interactive participation*

Around the technological confrontation, equally contrasting cultural formations emerge and clash. The analogue media have launched and still are the driving force behind the *mass culture* machinery, while the digital media have initiated a form which is still difficult to identify and name unambiguously (however, it is possible to pick and choose from a considerable group of terms with limited scopes: *cyberculture*, *2.0 culture*, *do-it-yourself culture*, *virtual culture*). Peter Lunenfeld, one of the most frequently quoted researchers of the digital culture, describes this state as the cultural war between downloading and uploading [Lunenfeld 2011]. Downloading is the contemporary continuation of one-way consumption logic known from the analogue media: printed media, radio, TV — this time taking place within the digital media. On the other hand, uploading is the

individual management of this circulation, possible owing to the digital access to other directions and models of communication.

This tectonics of cultural conditions can be viewed in an even broader perspective. Manuel Castells, the most popular sociologist of Internet, speaks about the spreading “Internet galaxy” in contrast to the famous metaphor of the “Gutenberg galaxy” formulated by McLuhan [Castells 2002]. The “Gutenberg galaxy” goes beyond the realities of the *mass culture*, understood literally and delineated by the industrial and technological revolution (electricity). It comprises also the general literacy made possible owing to Gutenberg’s invention and all communicative conditions and rules that can be associated with the logic of this medium [Ong 2009]. On the other hand, the “Internet galaxy” comprises, apart from the whole traditional sociological load, new communicative competences, new imagination of technoculture and new cultural codes of the media technology which no longer match Gutenberg’s scale.

The majority of culture and media observers speak in the similar spirit these days. They talk about the communication revolution, the digital breakthrough in culture on a scale of events initiating the Gutenberg’s epoch. Irrespective of the fact how we estimate the force of these transformations and where we will search for their communicative and technological foundations in the history of culture, we should acknowledge that the scope of influence of the digital machines’ logic is unprecedented in the context of the modern history of communication. Tests of strength and exchange of energy between the crossing conditions of the analogue and digital cultures are currently in the decisive phase. The tension gathered in this clash is able to reconstruct both the general knowledge and many particular descriptions of the world. Furthermore, in the context of digitality, cultural practices are changing, together with the ways of perceiving culture, sensitivity and structures of thinking about culture.

The format of analogue technologies was the meeting place of the forces whose synergy created the technological advantage of the European civilization on a global scale, led to the industrial revolution and, as a consequence, also to radical transformations in culture and social life which determined the unique character of development of the Western civilization. As it was already observed insightfully by Theodor Adorno and Max Horkheimer in the *Dialectics of Enlightenment* [Adorno & Horkheimer 2016], the analogue media (let us remember that they originate genetically from the printed media and imitate the mass communication model applied in them) led to *technicization* of culture and launched the logic of *consumerism*. *Technicization* means dependence of culture on machines and industrial production, coupled with the penetration of their internal grammar into the language of the cultural and social life. On the other hand, *consumerism* is the dominance of market logic principles in the process of creation and cultural circulation of goods. As a result of the combination of both these phenomena, the *culture industry* arose whose identification marks turned out to be: “production” of culture, “distribution” of goods manufactured with the methods of industrial production, their “technical reproduction” invalidating the previous division into the original and copies (this division was invalidated by the mass-scale reproduction offering a copy and the original in one to all consumers), “standardization” of manufacture and of the cultural “product” itself, “homogenization” of recipients, “consumerism” and many similar phenomena. Technology and *culture industry* began controlling even these areas of culture which had been non-technical or non-industrial prior to their emergence. Adorno and Horkheimer saw in the



mass media a mass manipulation tool which made it possible to control the addressees in a perfect manner — the mass media were used in such a way by the Nazi and the Communists. A similar objection to these media was also formulated by Herbert Schiller in his *Mind Managers* [Schiller 1973] — he considered them to be a perfect tool of the cultural and political colonialism at the disposal of the Western civilization. A synthesis of this trend in thinking about the relations between the media and culture was put forward by Neil Postman who outlined a vision of the abovementioned *technopoly* [Postman 1992], that is a specific form of the social organization whose essence is based on the modern triumph of technology over culture and the associated growing dominance of technocrats over the society.

### 3. Literacies — diversifying axes

It is time to describe the technological and cultural change and its influence on the heterogenizing *literacies*. Among the numerous elements constituting the digital turn, I select the ones which, when juxtaposed, represent the most important differences between the overlapping communication orders, and at the same time point to the historical continuation of many principles of communication and culture. The forms and rules inscribed in the *new media* format originate to a large extent from the genetic code of the previous media and continue the status quo written therein, they are *remediation*. The most powerful argument in favour of the evolutionary approach to the status of the *new media* and cyberculture is the fact, already diagnosed by me as a feedback interconnection between technology and culture, that in the communicative imagination there are rules and structures stemming from the analogue epoch and its dominant non-feedback culture and hierarchical communication on a mass scale.

#### *Traditional hardware vs. interfaces and software*

I will repeat that the new *literacy* is rooted in the ontic stratification of technology. Together with the advent of electricity, then electronics and its digital encoding, machines gained two usable/functional layers, inseparably interconnected but significantly different in the practice of everyday application. The hardware — the frame — can be regarded as a modern, evolutionary incarnation of the traditional material structure of technology, already familiar in the tradition of culture and social life — it comprises casings, processors, power supplies, resistors, chips, cables, screens, matrices. The digital technologies are inscribed together with them into the ready-made ways of using tools and machines — they take shapes and forms which are similar to the historical ones, thus comprehensible and subject to intuitive control. In contrast to hardware, software — despite being present in almost all the contemporary cultural practices, both individual and collective — remains the ontic *terra incognita* and a constant cognitive and functional challenge to culture.

The unknown obscures the familiar hardware layer and encourages us to immerse into the dematerialized cyberspace, into the world of data, hyperlinks, menus and interfaces which does not have tangible architecture. Cybertechnologies concentrate there the activity of their users who readily abandon the traditional space and invalidate its material objects in favour of the cyberspace. Our previous experience with the cyberworlds proves that we are present and act in them with great eagerness and lack of distance. We do this

because we are delighted by the lack of traditional, Euclidean limitations for the body, but also by the space-time continuum deformed inside the cyberworld and our orientation in it. Hence, this post-material post-space becomes for us — especially for those who are familiar with digitality from the youngest age — the space of the first contact, the native place of being and the place of everyday life which cannot be disregarded. We spend a growing amount of time in it and we entrust an increasing number of more and more important matters to it — from the efforts connected with living costs (e-banking), through a number of more or less intimate everyday activities (information, shopping, social activities) to virtual journeys among repositories of all kinds of knowledge.

Similarly as digital machines are suspended between two states of matter, we — their users, together with our imagination adjusting to this state of affairs — are standing on a symbolical bridge between two states of culture. However, while from the technological perspective, software can exist only owing to hardware and the reverse correlation is very limited — software is not necessary for existence (let us distinguish it from functionality) of hardware — the reference point of communicative imagination, located on the technological bridge, is subject to a much more complicated test. From this perspective we need to determine the status of digital space and to develop the ways of using it. As demonstrated by discourses on the character of virtual reality, the beginnings of this process were manifested as definition of the new through searching for its difference from the old, that is understanding of virtuality as a denial of materiality. Nevertheless, this type of binary opposites which stem from the delight at the emancipation possibilities in the digital world, turned out to have limited application. Today, analysts of the digital world and its users tend to perceive reality as a hybrid (most probably the fiasco of the most important public virtual project — SecondLife — plays a vital role here) in which the virtual supplements and extends the analogue, the material, and the real, named like that in the rejected language (augmented reality).

The difference between the real and the virtual overlaps with another layer which poses a challenge to the communication status quo. The point is being connected that is being online and offline. The former is the natural state for cyber-enthusiasts. To be online means to be fully present in the world. Offline is a category which describes more and more frequently the condition of communication exclusion, loneliness and passivity. The significance of these conditions is confirmed by the fact that we tend to abandon the temporary and episodic online life offered by GSM services, such as text messages or traditional telephoning, for the constant presence in the digital world, afforded by modern smartphones with access to the web. A similar change was effected a few years before by the replacement of modems, phoning to access the Internet similarly as landline telephones, with the broadband permanent access to the web.

The question about the imaginative differentiation between the soft and hard layers of technology is probably too early at this stage of the relationship between culture and digital technologies. It will be the key question no sooner than software overtakes hardware completely and becomes a synonym of technology in general. Reaching this moment will be conditioned not only generation-wise, but also by the progressing miniaturization of hardware which even today almost disappears out of our sight, along with the regular decrease in size of particular components.

Furthermore, our cultural imagination has to cope with one more unknown being, which has not been made familiar in the practice of the relationships between culture and

technology yet — the *interfaces*. This term refers to the technological and functional borderland of software, hardware and their users: the solutions which enable intermediation in communication among digital machines and in human communication with them. In my opinion, the general status of *interfaces* — I do not wish to elaborate here on their numerous forms and aesthetics — determines our contemporary ways of thinking about the relationships between culture and technology, about overlapping of two technological states of matter, their network paradigm and usable potential. *Interfaces* appear in the media galaxy when it turns out that hard technologies can be separated from the “virtual” software code managing them. They become the plural replacing the existing individual hard forms of the media. In this place, interfaces offer various media scenarios, usable and aesthetical, on the basis of the same material infrastructure. The contemporary media machines differ from one other precisely in input/output interfaces, while inside there are identical or very similar subassemblies designed in similar systems and managed by the same protocols. For example, it would be difficult to distinguish the inside of a modern advanced mobile phone from the inside of a laptop casing, or subassemblies of a satellite navigation system from components of a good calculator.

*Interfaces* determine the contemporary media ecology and outline the media landscapes which are metaphorical and physical at the same time. To be sensitive to them and aware of them means to abandon the monolithic perception and understanding of technology in favour of the logic of inter- and trans-mediality. This is the perception of media technologies as fluid forms, constructed modularly (out of tiny separate elements arranged into temporary compositions), open to extension, remixing, change and, most of all, supervisable by the user. Their potential opens both the media themselves and the accompanying cultural competences to their possible complete dependence on imagination and gestures of their programmers [Celiński 2010].

### *Visual culture vs. postmediality potential*

Let us move on now to the second axis delineating the differences between the analogue and digital literacies. Images and all the strategies connected with their privileged status have assumed a special role in the analogue mass culture. Theoreticians of culture and communication even tend to refer to the mass culture as the visual, pictorial culture, in which images are at the forefront of communication and are superior to other codes, while sight is the particularly privileged and central sense to which all other communication logic is subordinate. The modern world has largely become a phenomenon, an imagined condition and a visualized space, in which points of view, perspectives, screens, images, layout, design etc. play a special role. I am not able to discuss here in detail the diagnoses concerning the nature of analogue and digital images, their semiotics and transparency, or the visibility politics problem, fiercely debated by theoreticians of modernity. I just wish to point to the fact of the progressing visual hegemony within the digitality project, as well as its possible end along with the further development of this project.

Visualization of the digital language, that is design of visual metaphors for calculation operations, turned out to be a way to transform the complicated and inaccessible digital machines into the widely used media. Visualization of the cyberspace, achieved with the metaphors: of a desk (desktop of an operational system), files with documents lying on it (folders and files), a thrash bin, or rectangular windows of particular applications re-

sembling TV screens, made it comprehensible to the mass culture. The general history of cyberculture and Internet began at the moment when the first visual user *interfaces* appeared. The visual language of digital icons, animations, rendering and wallpapers, applied in them, had a force of and bore a likeness to the mediaeval *Biblia pauperum* — it made transparent the things which used to be mysterious and incognizable.

Thus, the *visual culture* logic, advancing quickly along with the cultural impetus of the mass communication technology (especially the press, photography, cinema, TV and advertising), became the functional core of digital machines, and they, due to their own civilization drive, turned into the most perfect reproducers and enhancers of the cultural power and dominance of images. In the development of the digital machine culture, all stages of communication history were repeated like in a kaleidoscope. The history of their *interfaces* began with the tangible acts (the mechanical *interface* phase when computers were generally operated from inside — due to the size of computers filling up quite spacious rooms at that time, the operators physically connected cables, adjusted potentiometers and managed the energy transfer), moved on to the application of a digital code and the ability to manipulate it with text commands (text-based user *interfaces* understood commands given to them in the form of words by the digital equivalents of typewriters connected to them), and finally in the 1980s, cybernetics was recounted with visual metaphors.

As a result, cyberculture has turned out to be the most perfect embodiment of visual culture at this stage of development. Digital images have not only absorbed effectively the majority of the previous analogue visual media (press, television, photography) but also offer a new visual economy. It comprises both static and dynamic images which are fully subordinate to digital manipulations of their authors and consumers, and which are the programmable space of remixing — they can be modified, rearranged and structured in any way, dependent only on imagination and available software used for manipulation. Moreover, digitality offers space for one's own visual creations which do not consist in modification of the already existing ones. Owing to the advanced programming software it is possible to create own visual aesthetics and video resources in a very simple way.

In consequence of the digital extension of the visibility potential and its role in representing the world we could think that the cultural triumph of images has been ultimately consolidated. However, some scenarios created by the cybernetic industry can suggest a different fate of cybertechnology and cyberculture. Engineers and programmers work in laboratories on how to circumvent the natural sensory facilities of man and enable a human being to get in touch with the digital world by means of connections, established by specialized neuronal *interfaces* directly with the brain, which would operate through decoding of electromagnetic waves in the brain by refined sensors and stimulating it in the same manner. Hence, a dream of many enthusiasts of technological progress could come true: a human communicating with the world not only through his/her own senses but also in parallel (or only in the latter way, as suggested by a Hollywood hit movie *Surrogates*) through interfaces — physically alien to a human being but extending his/her perception abilities instead — with the space of digital machines. The scenario of neuronal-technological connections is a story about post-media communication in which the traditional communication codes and channels are physically annihilated, that is they vanish from sight of the conscious, that is also cultural, perception. At the same time, this is a question about their rooting in communicative

imagination — whether and to what extent the traditional media have become permanently inscribed into our communication sensitivity; whether and to what extent their removal from the communicative daily life would mean elimination of the rules and structures imposed by them from the set of our competences. Is it possible, anyway, to create communication in which not only the physical media intermediating in the information exchange become invisible, but their organic ports (*interfaces*) in the form of the senses are disconnected? These and similar questions about post-communication scenarios arise today not only in science-fiction deliberations. The dynamic development of digital technologies, and especially the achievements in molecular engineering, biotechnology, nanotechnology and a number of related sciences lead to very specific solutions changing the meaning of communication in general.

### *Decoding vs. remixing*

The third axis delineating the differences between literacies is marked by the extremes: decoding of the analogue media and remixing with the new media. Since the time of the famous *The Death of the Author* by Roland Barthes [Barthes 1977] and many other diagnoses and events, less distinctive/perceptible in time but significant for the condition of the contemporary culture and constituting a uniform trend, we know that the elite culture model, distributed on a mass scale and consistent with the ideologies of authors/media, becomes a thing of the past. The traces of these changes were noticed not only by literature theoreticians, such as Barthes, but also by the discourse of arts which created a model of art that is interactive and aimed at an addressee — co-creator; by economists and sales people perceiving and segregating the market in terms of the categories of target groups and products subject to customization; or by producers and broadcasters who, tired of the struggle for universal media formats and standard protagonists, started additionally to seek the addressees getting emancipated and forming various niches and configurations. The epoch of the homogenous and passive consumption is eroding under the pressure of *prosumption* (*professional consumption*) logic, that is active, co-creative, conscious and tailored consumption, as well as under the influence of personalization of reception on the one hand and profiling of the content transferred in terms of a specific user's predispositions on the other hand [Toffler 1990]. As interpreted by cyber-enthusiasts, this erosion consists in evolving from a strategy of “reading” or decoding the media image of the world to an opportunity for “writing”, remixing or programming it. Quoting the *new media* historians, we can claim that digitality as such was a reflection of the liberal needs of the Western democracies and its presence testifies to the activity and ability to use the new media as an open project, subject to the social and cultural processing. To be aware of digitality means to go beyond the role of consumers and to enter the role of *prosumers*, creators and users-authors.

A model structure which inspires *prosumption* in the digital world is database architecture. This is the most important technological form of the new approach to the universe of information and knowledge, the logical principle of which is the lack of a presumed and supported hierarchy of information stored within it, openness to operation of various types of software applications, and accessibility through various interfaces and media aesthetics. Databases are the stores of the digital world in which, apart from traditional narrations and policies of knowledge suggested by the creators of the databases

and of the software reading them (e.g. a web portal created as an e-version of a paper), any other scenarios and procedures, devised and implemented by users, are possible (e. g. social networking sites where users arrange the content themselves).

Nevertheless, in the practice of contemporary use of this new information ecology, we hardly ever utilize its full potential. Similarly as in a state of limbo between software and hardware, and between visuality and postmediality, we are in the intermediary phase with respect to the information shape of the cyberworld. The intermediary state between full creativity of “writing” and passivity of “reading” is the partial undermining of the narration authoritarianism and the corresponding selective use of a part of the creative potential of digital machines. This intermediary state is characterized by the functional practices connected with menu and remix strategy. Menu comprises mechanisms and rules of functioning, inscribed in it by the software authors during its creation, which build the usable sense of digital tools. Menu determines access to selected functionalities of an application and is an intermediary between the programmed code and its user. On the other hand, remix is a strategy of using digital resources, which consists in the algorithmic transformation/distortion of individual, bigger and smaller, fragments of a code. In other words, remix is a game with digital memes, selected for unique functional sets with digital code modules. Remixes and selections from the menu pertain both to using software and hardware. They also become more and more eagerly undertaken practices of everyday life. With the new media we remix digital resources, but also material (analogue) ones: just like we photoshop pictures or remix audio clips, we also remix material products, e.g. we create our own configuration of a car based on the menu offered to us by the manufacturer during purchase, or we arrange the interior design on the basis of the resources available in databases of shops.

Cyber-enthusiasts keenly present the digital revolution landscape as a force liberating the cultural resources imprisoned in the obsolete legal system stemming from the feudal ideology and in the market-political structures associated with this system. This revolution is supposed, among other things, to encourage the *new media* users to take on a new role of active constructors of the symbolical and material world, and to be partisans liberating the imprisoned resources. However, despite such a lofty aim, this challenge has not been taken up yet by the collective communicative imagination, still determined by the habits, consolidated in the mass culture, of reading the linear hierarchies and narrations encoded in the media technologies and in the discursive spaces created by them. Gutenberg’s imagination copes poorly with the rhizomatic and fluid structures of digital databases. It feels secure only when it has a chance to recognize familiar shapes in them. On the one hand, as it has already been mentioned, this is the natural course of events — because we can cope with the new forms only through analogies and antilogies with the older forms. On the other hand, however, distance which ensures safety and comfort prevents the disclosure of what is really promising and attractive in the *new media*. Travelling in digital spaces, we imitate gestures and cognitive schemes used towards books and television — the analogue media world. For instance, in Internet we look for centrally managed storehouses of knowledge and manners of its traditional organization (web portals), and we operate applications and software within the framework of the menu and scripts provided by their authors. Despite unrestricted opportunities for moving in this space, free from hierarchical regulations, we predominantly decide to apply well-tried solutions. Out of the hundreds of millions of available sites, we choose the ones most frequently visited by others (the majority of Internet traffic is centred

around several percent of the most popular web portals), and out of the millions of paths the best-trodden and the best marked ones are also the most frequented ones (access through search engines or relevant software, positioning).

### *Borderland of literacies: info-aesthetics*

So far, I have discussed the general phenomena, difficult to capture with traditional methods of analysis based on media science and culture studies. I have delved under the surface fluctuations emerging at the borderline of culture, media, social life and technological development, with the intention of finding general cracks and shifts. The thesis about communicative imagination during reconstruction in the context of the ontic doubling of the technology culture and the *literacies* stemming from it needs further exploration. I resort to the specific, hybrid media forms described as information design or visualization/aesthetization of data. This media activity utilizes the visual aesthetics and graphic user interfaces, dominant in the popular use nowadays, and turns them into a language of expression illustrating digital databases, formally complicated, multidimensional and abundant in information. In this case, to visualize means to give an attractive shape, comprehensible in the iconic language, to sequences of digital code, algorithms and operating systems working on them, to design and picture information. As a result, enormous databases take on aesthetic forms and interfaces of maps, cartoons, interactive animated figures and colourful collages. At the same time, these databases, subjected to visual processing, do not lose their mathematical precision and ability be questioned — it is possible to get answers to algorithmic and interface queries from them with ease, to alter the existing parameters and to compose new ones. The databases, asked questions by means of visual manipulations, offer precise answers about e.g. value of shares in a given period, or tendencies regarding historical popularity growth of particular politicians. At the same time, they do not lose anything of their visually intriguing form and they perfectly fulfil the function of modern elements of interior design (see for example [www.visualcomplexity.com](http://www.visualcomplexity.com)).

The traditional hardware of technology overlaps with software and interfaces in the technological format and functional strategies of info-aesthetics. Visualizations of databases do not exist without hardware frames displaying them, but at the same time they become for them a unique interface, managed according to the grammar of specific software. Furthermore, they are a perfect, interactive and fluid visual message but also an entity to which any interface variant is not assigned permanently — just like algorithms inside them are subject to programming and hence they change the final shape of the medium, an interface is also in constant motion and is open to consecutive functional versions joining or replacing it. In this sense, info-aesthetics is a post-media entity, soft and fluid. However, it is also practised as a static message which demands decoding and reading in accordance with Gutenberg's rules — it can be a book for a passive user. Only when clicked, it becomes work-in-progress, a happening, a live act and a remix.

The competences necessary to create such new media entities are based on the spheres identified within the framework of modernity: arts and technology, design and programming. Similar resources should be applied to read/use them. Their full potential is disclosed only to those who are capable of their proper technical programming. Moreo-

ver, they can be personalized in the aesthetic sense, and then knowledge and skills from the area of aesthetics, broadly speaking: culture, will be useful. With respect to digital visualities, two orders of imagination and two cultures of technology overlap and cross. This database practice combines the analogue logic of visual culture juxtaposed with the rhizomatic structure of digital databases; interface sensitivity typical of fluid digital post-mediality with a need for a story and for aesthetization of digital worlds which has its source in the analogue culture order; Gutenberg's narration with the rhizomatic openness to digital remix and update. Hence, this is both a technological-cultural hybrid and a condition which demands hybrid interdisciplinary competences and knowledge.

## Conclusion

In these and similar hybrid circumstances — visual, audio, database, network, connected with code and protocols — the old literacy merges with the germs of the new one. The existing media culture formats converge with the fluid interfaces of digitality technology under construction; communicative imaginations and competences together with the resultant narrative and passive media strategies of addressees-readers are replaced by the logic of clicking and menu management, programming and remixing; while consumers, entrapped in the mechanisms of the cultural industry and the mass media, become emancipated taking on the roles of co-creators, prosumers, programmers and interactors.

Having left Gutenberg's territories in favour of the digital and network culture, we find ourselves on an unfamiliar ground and have at our disposal primarily the old, traditional maps and images. Accustomed to the analogue rules by the force of momentum, we try to colonize the new world and to make it familiar according to these rules, slowly and intuitively. However, the presence and scope of the technological change and the new communication continent created by it requires that communicative scenarios and rules, capacities and rights should be written anew, just like the media themselves have been rewritten according to the changed paradigms — their grammar, forms and place within the world. The changes taking place in this way refer to the major cultural choices: how we perceive, understand and create reality, how we communicate with each other and with the world. This is a special moment for the history of communication and the media in the last several hundred years. For the first time we have an opportunity, not only as individuals but also as communities, to define in the "real time" the directions of development of the media technologies, to give them shape and define their social meanings; to program not only the media but also our imagination in contact with them. In the context of such circumstances, we need a discursive, interdisciplinary and educational effort so that the *mediamorphoses* going on should not become the arena of events with respect to which we will again have the role of mere observers and consumers, just as in the case of the mass media. The growing digital and network communication technologies need culturally mature, that is thinking critically and having necessary cognitive distance, active users, societies and cultures. Going beyond Gutenberg's mediations and analogue literacy is one of the most important challenges and tasks for the world of culture and knowledge institutions today and one of the most significant fields of reflection and action within the *culture of knowledge*.



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