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Cyborgisations: Prospects, Social Imaginaries, and Educational Projects¹

This article aims at an analysis of the phenomena creating the contemporary processes of cyborgisation. These processes consist in an inevitable growth of phenomena that are hybrid, borderline, ambiguous, and hard to classify – inter-categorical, which is caused by the increasingly stronger, irreversible impact of present-day technologies on our daily life in almost all its dimensions. In this paper I shall present selected aspects of cyborgisation: the unavoidable relations between technological changes and social transformations (together with the discourses of advance and expectations of positive or negative transformations). I shall also analyse imaginaries concerning cyborgs – a sexualized sphere of fantasies on the power of technology that liberates or leads to destruction, as well as contemporary changes in this area initiated by critical trends in social thought. I shall finally discuss some dimensions of cyborgisation in educational references.

Cyborgisation – localisation of the process on the map of discourses of technology

Reflection on education and socialisation in the context of technology is related – in a way automatically – to thinking about change: as if the inclusion of new objects and things into educational processes caused their immediate – almost magical – transformation and improvement. The reasons behind such hasty identifications include the discourse of progress, with its obvious component of technical development. Meditations pertaining to technology have always been related to the social. Technology has been an obvious – albeit most often disregarded or ignored by cultural and social researchers – pillar of social change: suffice it to mention Lenin's definition of socialism in which the essential change of the structure of the ruling power ("the rule of the soviets") was specifically connected

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with modernization processes in the area of technology (electrification to be more precise). On the eve of the Bolshevik revolution at the turn of the 20th century, the economy flourished, experiencing integration on the global scale as a part of globalization processes. As a result of the technical revolution, which gave the world the telegraph, the telephone, electricity, and the development of the railway system and navigation, industry was growing dynamically, bringing about an increase in the wealth of societies (Lenin 2004). Owing to new means of communication, the 1912 Titanic disaster was an event everyone learnt about immediately. Intellectuals assumed that global communication would result in global public opinion, which in turn was to be the best guarantee of peace. When on 1 July 1913, an official time signal was broadcast to the world from the Eiffel Tower, Europe was experiencing a great intellectual confusion: the acceleration of life, technological changes leading to a redefinition of the basic notions such as time and space, industrialization causing the uprooting of great masses of people, and a radical change of the image of the world as a result of the revolution in mathematics and physics. In this context, Vladimir Lenin managed to introduce an innovative type of rule implemented via the party-machine: a collective, logical, disciplined structure, with the internal division of labour subordinated to a concrete goal and concrete tasks.

Similar social hopes were related to the dissemination of the telephone. In the 1940s, Marion May Dilts quoted General John J. Carty, who anticipated that "Some day we will build up a world telephone system making necessary to all peoples the use of a common language, or common understanding of languages, which will join all the people of the earth into one brotherhood" (Dilts 1941: 11). Therefore, beliefs on the revolutionary, equality-promoting or emancipatory social potential, have always been included in the sphere of technical changes (Caronia 2005: 98). The deterministic approach to technological development interweaved with social development has a long tradition and is strongly rooted in the 19th and 20th century thought. At the heart of the approach lies a conviction that things determine human attitudes, behaviours, ways in which people see and understand the world, and identities. Technological inventions were believed to be able to improve human existence. Nevertheless, the same deterministic discourse also generated technophobic beliefs – about a ruinous, dangerous or "devilish" impact of things (artefacts) on human life. This is because artefacts are perceived as artificial, non-authentic and inhuman aspects (objects produced on a mass scale in factories) of the reality, which in effect do harm to people (Caron, Caronia 2007).

The undoubtedly technophobic social behaviours resulting from the non-understanding of the essence of things include the reactions of viewers participating in the first film screenings. On 28 December 1895, films by the Lumière brothers were shown all day long in Grand Café in Paris. The first show included several films: *Baby's Breakfast*, *Workers Leaving the Lumière Factory*, *The Sprinkler Sprinkled*, and *Arrival of a Train at a Station*. The last film proved to stir the most sensation: first, an empty platform was shown on the screen, followed by the moment of the train's arrival. During the first screenings, when confronted with the view of the locomotive reaching the station, the viewers were escaping from the place, shout-

ing in panic. However, the public soon started to demand new attractions and the fear vanished.

European thought is marked by the presence of technophobic approaches, which – in contrast to reactions resulting from ignorance – maintain more or less justified concerns related to the change of nature of the social relations. These approaches include romanticism and Luddism (both in their former and current versions). They are both clearly connected with the development of the 18th century capitalism and contrast the idealized concept of nature with machines. Nature played the role of a guarantor and source of moral conduct. It was also understood as an “internal voice” – a road to self-discovery, the development of individual originality and uniqueness. The romantic concept of nature contains special care for oneself as the basis for the identity-based design of the “self”. Here, nature is, however, clearly defined against the world (civilisation), as can be understood from works by Jean Jacques Rousseau – one of the most important representatives of romanticism. Luddism is a similar approach – it also maintained the romantic critique of industrialisation. Luddism as a social movement was established at the turn of the 19th century (the time of the industrial revolution) in Great Britain. Its members were representatives of free skilled workers, artisans, and weavers. Luddites protested against changes in lifestyles and work caused by the invention of weaving machines. The belief that machines are going to take work away from concrete social groups triggered hostility towards technology as expressed in the organised destruction of looms and machines (Dusek 2006).

The poor image of artefacts in the traditional thought of the West also resulted from critical approaches (Marxism and the Frankfurt school), which tracked down processes of alienation, reification and fetishisation being synonymous with non-authentic existence. These critical approaches assumed that the relation between people and objects is always substitutive, fetish-based or non-ethical; that what we should cover with greatest care are social relationships and real people (Olsen 2003). Critical approaches also contributed to the popularisation of the idea of textuality, discourse analysis, and the exploration of meanings and their social agency.

Nevertheless, the deterministic perception of the relation between technology and social life is by no means the only possible one. The paradigm which competes with it is called anti-determinism and its starting points are phenomenology and social constructivism. The gist of the paradigm is the assumption of the generation of culture – meanings and practices – in daily human life. We can, therefore, think of the social power originating from the very order of things. However, we need to take into account the order of meanings and the structure of senses, in which these artefacts function. Culture-creating processes – which also involve cultural manners in which objects are used, strategies, tactics and actions – are founded both on the specific cultural framework, and material resources, jointly creating the world of life (Olsen 2003). New materialism, which has been growing in popularity recently, stresses object studies, which refer to the world of life in its material dimension, but which have been neglected in cultural studies. It shows in what way things become domesticated in the human world in the existing structures

of meanings, how they co-create new scripts of behaviours and identities. What marks anti-determinism is the relational attitude as a part of which significant relations between people and artefacts are semantically analysed along with the cultural mechanisms of the introduction of objects into the social world (Caronia, Caron 2004), as well as the exploration of the sphere of the imaginary and ways of social cooperation between human and non-human actors.

Cyborg imaginaries in symbolical order – culture and technological order

The figures, patterns, and symbols in which the condensed imagination and materiality work are an extremely important sphere regulating our daily ways of thinking about the technological order. This is because symbolic space generates changes, shaping their very possibility. The tradition of Western progress was very visibly connected with a specific symbolic spectrum – a reservoir of patterns and a backup facility for identities. Figures of monsters as imaginaries of the inhuman defined the borders of human community, acting for the benefit of its consolidation. Having a close look at the visions of cyborgs, we may explore the meanings that are or used to be attached to close relationships between people and technology, and determine what ideologies and visions of politics such materialisations of imagination serve. The cyborg as a product of a mix between body and machine is a synonym for a monstrosity, non-naturalness and natural-technical excess. It thus consolidates the separateness of the discourses of nature and technology. It should be pointed out that the figure of the cyborg in the European history of progress has changed considerably.

The imaginaries concerning the technology of the modernist industrialisation often focused on the topic of destruction – the power of technology, which in a peculiar way becomes autonomous and shows its power, announcing disobedience to people. When constructing similar representations, the makers of the 1920s cinema identified them with the destructive powers of the female body and the disastrous potential of the technological progress (Braidotti 2013). The indicated sources of destruction were materialised in the figures of women-robots (technological ones such as the *femme fatale*: as the Eve of the future or the mechanical Maria²). Therefore, the clearly sexualised and genderised technology seemed both fascinating and terrifying – equally liberating and at the same time able to distort the course of history.

The cyborg figure is also emblematic for the contemporary human relations with technology. The cyborg is a being which lifts the duality of the body and its technological support, and negates the division into the natural and the cultural. Grażyna Gajewska shows that the ambiguous status of the cyborg forces people

² References to Fritz Lang's 1927 film *Metropolis* and its literary equivalent *The Future Eve* of 1922, written by August de Villiers de L'Isle-Adam.

to confront other imaginaries of themselves, and that it questions the consolidated beliefs on the mind, body, gender and identity. The author argues that the figure of the cyborg presents various possibilities such as the existence of eccentric shifts and normative precedents (Gajewska 2010: 290).

The contemporary cyborgisations have a relatively long history. In the 1960s, scientists working for NASA expressed their conviction that it is necessary to create human-mechanical hybrids that could work in the extremely difficult conditions of outer space. These self-controlling technical-organic systems were called cyborgs. Since those times, the name of a cyborg has also been applied to hybrids escaping clear-cut identifications, since the logic of their creation consists in introjection and absorption, which raises the barriers between the natural and the technical. This is because cybernetic bodies cannot be dismantled into organic and inorganic parts: the natural body and the technology that encapsulates it. In this sense, the cyborg is a new quality – an organic-technical unity. Hence, the project of cyborgisation fitted the tradition of scientific discoveries contesting the pillars of the former social order founded on the division between the spheres of nature and culture. It changed the organisation and imaginaries about man as much as Nicolaus Copernicus's, Charles Darwin's or Sigmund Freud's discoveries before it. Cyborgisation contains a fantasy of self-control, which became very important from the political point of view in the context of the so-called space race between the western and the eastern worlds. Therefore, cyborgisation determined a certain horizon of power – who controls the body, may keep the Earth and the space beyond it under control (Gajewska 2010: 23). When the military-scientific project of cyborgisation began to lose its political potential, cyborgs began to increasingly populate pop-cultural productions (such as the films *Terminator* and *RoboCop*).

Since the second half of the 1980s, the processes of cyborgisation have been reviewed from critical (feminist and postcolonial) standpoints. These verifications aim at saying farewell to the military entanglement of the figures of cyborgs and exploration of their non-military vital field of possibilities. What is at stake in this procedure, is ways of seeing the future and the political imagination in the context of new connections between the exact sciences, humanities, and ideologies. As Gajewska argues, cyborgs – hosts of the future – shall not be neutral. They are by necessity burdened with the compulsion of politicization and the invention of non-military motivations for human-technical immersions (Gajewska 2010: 37).

The pioneering work showing the necessity to explore the figures and processes of cyborgisation to the humanities was Donna Haraway's *A Manifesto for Cyborgs: Science, Technology and Socialist Feminism in the 1980s*. Its author turned attention to the politicalness of the figure, since – in her opinion – the way we imagine human-technical hybrids is closely connected with the manners of the organization of social life intermediated by highly advanced technologies (Haraway 1994).

A Manifesto for Cyborgs was published in 1985 and considerably contributed to the shaping of thinking about man in a posthumanistic perspective. According to Haraway, the cyborg challenges the ontological purity, questioning the existence

of the differences dividing the human and the animal, the organic and the inorganic, and the differences between the body and the machine. The author believes that the machines of the late 20th century have totally blurred the border between naturalness and artificialness, the mind and the body, self-development and external intervention, as well as many other dichotomies used to describe organisms and machines. According to Haraway, cyborgs are not subject to biopolitics, which significantly differentiates her approach from the Foucauldian way of understanding of the biological-ideological relation.

The figure of the cyborg simulates politics, which for Haraway means that it produces relations and tensions between fiction, ideologies and the exact sciences, which are focused on a constructive future rather than solely on the deconstruction of the past (Haraway 1994).

The author of *A Manifesto for Cyborgs* is connected with the socialist feminism and it is for this reason that she searches for an alternative tale about the cyborgs – one that is a utopian tale non-entangled in the structures of domination. However, she does not idealise the possibilities, being conscious of the many connections between technology and the most important contemporary discourses that the cyborg is an emblem of: militarism, globalism, capitalism, and patriarchalism. She is also aware that there is no escape from cyborgisation, and that for this reason the question of the survival in new – culturally and politically unfavourable – times is so significant. In 1985, *A Manifesto for Cyborgs* was without any doubt a revelatory description of the concept of the complex connections between people and technology. It was an important voice showing social, political and economic conditions of the development of contemporary identities in the environment in which the significance of technology has been growing. Thirty years after the first publication of *A Manifesto for Cyborgs*, the tasks of the analysis of modern technologies, watching who they serve and supporting such a way of their transformation that they serve the non-dominating – i.e. those who need them most – are still up to date. The observation of new human-technical hybrids and motivations accompanying their origin deepens the understanding of post-industrial reality. It is also worth adding that the figure of the cyborg opens up the space of thinking of alliances with subjects other than people – animals and machines – with a view to the extension of the boundaries of the definition of the common world and the practice of a radicalized version of democracy extended to include the non-human space.

Cyborgisation of education – exemplifications

Today, the advantages of cyborgisation processes are described more often than their dangers. Similarly, reflection on the cyborgisation of education is related both to concerns connected with the exposure of children and youth to the dynamically developing technologies, and hopes that this group of learners will acquire new cultural competences indispensable for critical participation in the technologized society.

Intelligent technologies increasingly change the functioning of education. Becoming fully-fledged educational actors, they make learning a community and multimedia process that is connective, open and placeless. In this context, we should expect a considerable change of the role of the teacher – to become one of the moderators of the processes of the construction of learners' knowledge. The structure of the learning process and its infrastructure should become more important than the provided content. Perhaps intelligent technologies in the educational space will act as an *ignorant schoolmaster*, creating truly equal conditions for everyone. However, in a less optimistic scenario, they may create a perfect system of the monitoring of the course and effects of learning at the age of the increasing data saturation and the multiplication of supervisory procedures, deepening the existing social inequalities.

Mobile technologies, intelligent network equipment and wearable technologies have significantly invigorated the processes co-creating the cyborg model of education. Additionally, the intensification of cyborgisation processes takes place owing to the introduction of the following to the educational space:

- social media, video platforms, and text and picture messages as new learning spaces and techniques;
- intelligent network devices with the localisation function and devices sensitive to the context used in today's science;
- educational mixed applications – ones using real materials such as photographs, audio recordings, video recordings and the augmented reality technology;
- wearable technologies providing personalised data for further research;
- learning involving touchscreen devices and motion controllers (such as Kinect);
- learning connected with designing and producing things, referring to the 3D printing technology;
- gamification;
- educational design using holographic telepresence technologies (3DHT) such as virtual teachers, etc.

Flipped classroom

One of the most important trends connected with educational changes is the concept of the flipped classroom (inverted classroom, reverse teaching). It is blended learning, in which the learning/teaching structure has been reversed owing to the embedding of educational processes in the contemporary technological environment, especially that of mobile technologies. Learners independently explore the educational content they are provided online (most often in the form of video material prepared by the teacher), taking video lessons at their own homes. At the same time, activity at school is based on exercises and is practical, as it refers to the strategy of problematisation – discussing and solving problems by learners with

the teacher's help. The teacher-learner relations are personalised, with tutoring being the dominant feature. The teacher not so much leads the process of the content provision and learning, as he/she is its coordinator, indicating valuable educational resources and materials, and making the learners aware of their own cognitive constructs. What is also important is the process of group learning during the lesson and cooperation between persons marked by varying levels of advancement. The undeniable success of the flipped classroom, as confirmed by educational research (a spectacular improvement of learning outcomes has been recorded, indicating the wonderfulness and simplicity of this strategy), consists not so much in a simple change of the place in which the content is provided (home instead of school), as the teacher-learner activity at school related to the delivered and watched (listened to) material (Bergmann, Sams 2012; Gerstein 2012; Lage, Platt, Treglia 2000). The basis for such a teaching is the audio-visualisation of knowledge, communication, and resignation from the teacher's control in the process of content absorption. Learners acquire full autonomy, come to school prepared, and the gist of the school learning lies in the learners' questions emerging during their independent coping with the material (Dylak 2013: 203). The flipped classroom may be called mobile teaching. It is free from the illusion of the permanence of the place ("the only good one") in which the knowledge is absorbed, engages various subjects (most often the learners' close social circle), and assumes an unrestrained flow of knowledge that is "situated" in many places, concerns various disciplines and topics, and is related to the existing technological infrastructure.

Does the cyborgising education produce cyberchildren?

New technologies also change the space of present-day childhood studies. Today, it is strongly polarised and dominated by two hardly fortunate theoretical orientations: one marked by an alarmist spirit, amplifying the model of the "endangered childhood", and the second one, which a priori celebrates the model of emancipated, competent *cyberkids*. The said polarisation deprives researchers of a chance for a comprehensive exploration of the indisputable potentials of the digital culture and the entire range of reservations and limitations related to the children's participation in it.

In the context of the development of modern communication technologies and their potential impact on the children's population, it is the approach of Marc R. Prensky, the creator of software for children, educator-practitioner and pedagogical visionary, which is most often referred to. Prensky introduced the distinction *digital natives/digital immigrants* to the vocabulary of the social sciences to make oppositions between generations in terms of the degree of their domestication in the digital culture. His point of view has been almost uncritically adopted by social and educational researchers. Prensky defines the generation of digital natives through their birth and development in the digital era, indicating an anthropological difference radically separating the generation from that of their parents. Ac-

According to the researcher, the differences concern the sphere of cognition, specific construction of identity, and the valid models of social relations. The generation of digital natives

have spent their entire lives surrounded by and using computers, video games, digital music players, video cams, cell phones, and all the other toys and tools of the digital age [...]. Computer games, email, the Internet, cell phones and instant messaging are integral parts of their lives (Prensky 2012: 68).

In the cognitive sphere, Prensky stresses mainly the non-linearity of perceptive processes of the youngest generation and the phenomenon of multitasking – a simultaneous performance of many diverse activities. It is a result of the young people's daily immersion in the digital culture and the necessity to cope with the flood of information from various sources, provided by many communication channels. He also points to the importance of interactive processes (including the interactivity of media coverage) and the audio-visuality of knowledge. The author attributes social and educational value to the cognitive strategies of the digital natives, shaped by long-term network participation – which stimulates innovation, creativity, and originality. Therefore, participation in the digital world – according to the author – proportionally increases the cognitive possibilities of the youngest generation. This thesis leads the researcher to an optimistic assumption of the democratic access to knowledge and its egalitarian creation (everyone creates knowledge, everyone has a potentially full access to today's open information resources).

Prensky also believes that the openness and anonymity of the Internet changes many traditional models of social relations, in which analogue interactions (defined as hierarchized, conventionalized social contacts connected with the ascribed social roles and defined places) no longer count, for the benefit of a cloud structure – democratic, inclusive (participatory) and partnership-based. This attitude is subsequently shifted into the sphere of social relations taking place in “real life”, which encounters resistance and the barrier of non-understanding on the part of the older generation – the digital immigrants.

The author adopts similar assumptions when he describes the reconstructive identity potentials of the digital culture – the freedom of self-determination, experimenting with various versions of the “self” created and improved with the help of the available digital resources. In other words, every digital native has a certain image policy (manages his/her own image), creating numerous versions of their own “advertisements”.

Prensky's enthusiastic diagnoses are sometimes rejected in the socio-cultural aspect. Neil Postman, one of the best-known critics of technology, consistently sketches the picture of a technological inferno. According to him, technology dehumanises, addicts, destroys culture and authentic interpersonal communication, and facilitates the brutalization of life of the youngest generations, exposing children to premature contact with much undesirable content of contemporary culture (pornographic or paedophile content, cyberbullying, hate speech, etc.).

Postman describes digital culture solely in terms of destabilization and destruction (Postman 1994). His reflections are, however, worth attention, since they focus on the hardly discussed aspects of the youngest generation's digital participation. Contrary to the belief on the democratic (equality) potential of digital culture, the author also turns attention to the segregation processes present in mass media (such as the very clear gender segregation). These processes considerably consolidate stereotypization and traditional identities, instead of questioning them.

It seems that neither the model of emancipated cyberchildren nor the model of child-monsters, victims of digital culture, are utterly accurate. This is because both groups of theories are founded on the assumption that the modern technology itself is agential and produces inevitable – oppressive or liberating – changes as a result of its broad availability (Buckingham 2009). Both these approaches are also related to a romantic concept of childhood in its pessimistic (an innocent, helpless child requiring care and protection) or optimistic (a creative, naturally innovative and competent child) version. Due to the overlapping of both groups of assumptions, children in contact with digital culture are essentialistically defined as alien *cyberchildren* with distinct species traits. We must not focus solely on the idea of the agency of technology as such. What needs to be taken into account primarily is the context of its development and concrete practices of its application, as well as the social spaces in which technology appears (Buckingham 2009).

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Summary

Cyborgization: Prospects, Social Imaginaries and Educational Projects

In this article I discuss the concept of cyborgisation at the level of social prospects, social imaginaries and educational projects. The ways in which this concept has emerged are discussed to highlight the type of reflection which continues to inform the discourses on contemporary technologies and their impact on society and education. The most important part of the paper focuses on emerging technologies and their educational impact as well as on debates about the cyberchildren generation.

Keywords

cyborgisation, technology, social change, education, cyberchildren

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