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## **To Dominate or to be Dominated. About the Attitude of Humans to Technology in Modern Culture**

In the circuit of cultural issues created by films, literature and the social impact of newly introduced inventions, two opposite tendencies can be distinguished of how humans relate to technology. The first one is that of thinking about technology as a useful tool and something that serves humans; the second one is that of anxiety of being dominated or even destroyed by a machine (or a cyber entity) which went out of control. Thinking in binary categories (dominate vs being dominated) is strongly promoted in films, literature or comics and the phenomenon is far from being a new one. A sufficient testimony of the two tendencies of thinking being present in culture is borne out by a series *Matrix*, depicting the world ruled by revolting machines, or a film *Chappie* from 2015, which captures a struggle for a particular kind of technology that should be introduced in the police and in the army — automatized androids or huge exo-skeletons steered only by a user sitting in them. Interestingly enough, the majority of the attempts to personalize technology boil down to presenting it as inimical to humans.

### **Robot or Automaton? Ideology of the Concepts**

To understand better the dichotomy of thinking on technology, it will be convenient to begin with analyzing the development of terminology used in describing it. The words “Automaton” and “Robot” differ in terms of their origin and of the tradition of thinking attached consequently to it. Distinguishing these two terms allows for outlining two threads of thinking. By the 17<sup>th</sup> century the word “Automaton” also applied to humans, since it described the subject able to undertake autonomous actions. However,

along with the growing popularity of machines resembling living objects (such as the Vaucanson duck from the 18<sup>th</sup> century), the word was redefined and its meaning broadened so as to refer to apparent actions of Automata determined in reality by somebody else.<sup>1</sup> In this context, the word Automaton ceased to be immediately related to humans and began to refer first of all to functioning mechanisms. The opposite is the case of the term “Robot”, introduced considerably later (in the 20<sup>th</sup> century) in Karel Čapek’s drama *Rossum’s Universal Robots* (*R.U.R.* in short).<sup>2</sup> The word “robot” stems from Russian “rabota” (the noun means “work” and corresponds to a verb) and is representative of a different attitude to technology. A work-accomplishing object is presented as an instrument replacing humans in irksome activities. To understand fully the meaning of this term, it is worthwhile to consider time context in which it appeared. The beginning of the 20<sup>th</sup> century marks the development of mass production and, consequently, the flourishing of such ideas of organizing work as Fordism and Taylorism, which equalled humans with machines. What is enshrined in the very etymology of the word “Robot” is an utterly functional thinking on technology, which is reduced to the role of an instrument. Nevertheless, in the time when the word was introduced to cultural circulation, humans were treated as instruments and as an extension of machines. The rhythm and movements of a worker depended on the speed with which a conveyor belt advanced; thus, it was machine that determined from the outside the principles of movement and applied it directly to the area of human body.

The exploration of the potential inherent in human body mobility and striving for technical perfection seems to be a tendency which permeates deeply the culture of the period. It is especially visible on the example of Dadaist experiments such as Fernand Léger’s *The Mechanical Ballet*. The geometrization of human body movement, in turn, came clearly to fore in Oskar Schlemmer’s theatre concept of experimental projects of the Bauhaus scene. The director expressed the idea of the rationalization of movement in the following words: “Through liberating its own mechanics, directed to the realm of gymnastics and acrobatics, the body is able to demonstrate the mathematics that rules in it.”<sup>3</sup> The aforementioned phenomena are not restricted to Europe; in Russia, in the theatrical milieu, Wsiewołod Meyerhold

<sup>1</sup> E. Huhtamo, *Z ust lalki, niejasno. O sztuce Kena Feingolda* [From *The Puppet’s Mouth, Darkly. About Ken Feingold’s Art*], [in:] *Ken Feingold: Figury mowy*, ed. R. W. Kluszczyński, Centrum Sztuki Współczesnej Łaźnia, Gdańsk 2014, pp. 46-47.

<sup>2</sup> D. Levy, *Love and Sex with Robots. The Evolution of Human-Robot Relationship*, Harper Perennial, New York 2008, p. 2.

<sup>3</sup> O. Schlemmer, *Eksperymentalna scena Bauhausu*, [trans.] M. Leyko, Słowo/obraz terytoria, Gdańsk 2010, pp. 56-57.

realizes the concept of biomechanics — the precise organization of the movement in time and space, based on a detailed description of motion. In the field of experimental cinema, in turn, a noticeable *Man with a Camera* by Dziga Wiertow appears, one of the first films presenting the world from a non-human perspective. The reality perceived by the camera's eye is meant to suggest to the spectator a mode of thinking proper to machines and narrated by a non-human medium. Watching Wiertow's film, a spectator is forced to resign from his/her own optics in favour of assuming another perspective, namely the mechanical one.

Taking into account historical and cultural context, we might say that in the word "Robot" the idea of the commencing 20<sup>th</sup> century was expressed: the image of a well-functioning instrument, an efficient mechanism reduced to precise accomplishment of a given task. As a supplement comes Čapek's drama, which depicts class division, the exploitation of robots being treated like workers and, eventually, their revolt.

Two different approaches become visible here, represented by apparently synonymic expressions. Still, it is worthwhile mentioning that if the original word "Robot" denoted an automatized instrument, the word "Automaton" had to be terminologically differentiated from humans and the similitude between them blurred. Addressing the problem in the language of psychoanalysis, we might say that the human is repressed in the automatic, which is tantamount to referring the former into the unconscious.<sup>4</sup> However, the repressed returns in the guise of symptoms, anxieties and desires. The fear of a revolting Automaton, present in culture, may be interpreted as a cultural trauma. In 1984 Sherry Turkle, a researcher, compared computer to Rorschach's test<sup>5</sup>, stressing the fact that computer is a medium very likely to stir up projections, which means that humans are inclined to project unconscious content onto such technologies<sup>6</sup>. Possibly, the image of the hatred-inspired artificial intelligence wreaking havoc on humanity bears

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<sup>4</sup> S. Freud, *Poza zasadą przyjemności*, [trans. J. Prokopiuk], Wydawnictwo Naukowe PWN, Warszawa 2012, p. 61.

<sup>5</sup> "The Rorschach test is a psychological test in which subjects' perceptions of inkblots are recorded and then analyzed using psychological interpretation, complex algorithms, or both. Some psychologists use this test to examine a person's personality characteristics and emotional functioning. It has been employed to detect underlying thought disorder, especially in cases where patients are reluctant to describe their thinking processes openly. The test is named after its creator, Swiss psychologist Hermann Rorschach. The Rorschach can be thought of as a psychometric examination of pareidolia, active distorted perception of visual stimuli. In the 1960s, the Rorschach was the most widely used projective test." Wikipedia, the free encyclopedia, The Rorschach test Access: [www.en.wikipedia.org/wiki/Rorschach\\_test](http://www.en.wikipedia.org/wiki/Rorschach_test)

<sup>6</sup> S. Turkle, *The Second Self*, The MIT Press, Cambridge, Mass. 2005, p. 20.

the character of a fantasy of an evil Doppelgänger, so it is a transference of a negative picture of humans themselves onto the realm of technology. The idea of an evil Doppelgänger and the problem of technology are matched in the theory of *The Uncanny Valley*. Its author, Masahiro Mori, was a roboticist who surveyed human reactions to contact with humanoid automata. He based his theory upon the category the uncanny (the German *unheimlich*), formulated by Ernst Jentsch and developed by Sigmund Freud.<sup>7</sup> A media researcher, Agnieszka Jelewska, described the diagnosis made by the Father of Psychoanalysis in the following words:

. . . Freud focused on the ambiguity occurring in the German “unheimlich,” stating that the experience of the uncanny is not that of the unknown, but the opposite: of the known and repressed . . . Freud reduced the role of Automaton in the mechanism of the uncanny and paid special attention to the silhouette of the Doppelgänger, a fictitious and malignant twin brother.<sup>8</sup>

The concept of Freud adduced here is fundamental not only for humanists addressing the problem of Automaton, but also — owing to the popularization of the above theory by Mori — for engineers. Jelewska underscores that for Freud, in the processes taking place around the phenomenon of the uncanny, the question of psychological defense mechanisms effective in transferring meanings and creating images is incomparably more important than the Automaton itself.

The work of Ken Feingold appears to be extremely interesting in this context: a media artist and psychologist who devoted the majority of his life to constructing interactive automata in the shape of human heads. The objects devised by Feingold are mesmerically similar to humans (part of them are the castings of the author’s own head), they are able to talk to each other or to the viewers of the installation. Their ad hoc generated dialogues are very often strikingly similar to everyday conversations of humans, which might overlap with the aforementioned category of the uncanny. Feingold’s objects are situated midway between striking resemblance to humans and drastic dissimilitude with them, impossible to be ignored. Moreover, the author purposefully programmed them in such a way so that they could commit mistakes and were unable to converse correctly. The role of these disturbances was to awaken the spectator from his/her trance and to make his/her defense mechanism — namely, his/her imaginative projections on the automaton — visible.

The artist’s inspiration was a program ELIZA from 1966, written by Joseph Weizenbaum, a computer programmer and psychologist, who

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<sup>7</sup> A. Jelewska, *Sensorium. Eseje o sztuce*, Wydawnictwo Naukowe UAM, Poznań 2012, p. 150.

<sup>8</sup> *Ibid.*, pp. 150-151.

created the first chatbot meant to function as a therapist. A person aware of this context and interacting with Feingold's automata begins to notice that they resemble him/herself, but the other way round too: humans appear to be similar to machines. Interestingly, just a few years after ELIZA had been created, its virtual patient appeared: the PARRY program, imitating a paranoid person. The fact that mental illness might be regarded as a system failure that can be programmed inspires fear and makes the spectators of Feingold's installations question their sense of subjectivity. Knowledge turns out to be a database, then, and madness a system failure.

To sum up, the category of automaton is a term situating the technology object in the situation of a subject (with robot the opposite is the case: it is an object). Still, this does not mean that technology obtains its own subjectivity in the concept sphere — it plays the role of a mirror, in which humans are reflected. In the wide circulation of cultural data, it assumes predominantly the role of the wretched Doppelgänger.

### **About the Anxiety of Progress**

Technological progress in general and its vehement acceleration in particular spawned now and again panic in society. The moments both progress and acceleration intensified in history are customarily named industrial revolutions. Four prominent ones can be listed, if viewed from a contemporary perspective. The first occurred at the turn of the 19<sup>th</sup> century, when mechanization of production took place, based mainly on steam engines fueled by burning coal. Therefore, this period is called the century of steam. In this time, the branch connected with steel production was best developed, but, interestingly, textile industry too — not because of using steam power, but due to using power-looms. The second revolution took place at the beginning of the 20<sup>th</sup> century and was connected with inventing electricity and introducing it to industry, which made conveyor-belt production possible. In consequence, cheap mass production appeared, albeit at the expense of the unification of products. At that time transport and communication were based mainly on railway, but car industry began to develop as well. The third revolution was triggered by the invention of computer technologies and robotics. Analytical methods and calculating inventions in the form of mechanisms had already existed for centuries, but the introduction of computers in the 1970s, powered by electricity and using digital computational techniques, significantly affected the economic and cultural situation. This phenomenon was about to initiate the third revolution: the period of using nuclear energy and the expansion of motor car industry. Cars began to be a commonly accessible good and air plane

industry developed as well. Contemporarily, in turn, the beginning of the fourth historical revolution is can be observed. Internet, 3D press and genetic engineering might be listed among the main factors conditioning and spurring it. In the transport sector, electric cars and super-fast trains are representative of it. Space travels are contemplated in some future. As for the methods of obtaining energy, there is a tendency to abandon the existing ones on behalf of ecological methods. Describing the fourth revolution, the problem of artificial intelligence and threads posed by it are seriously taken into consideration.<sup>9</sup>

Each one of the revolutions caused waves of anxiety and irrational behavior in society. The fact was pointed out in the 1960s by an economist Henry Hazlitt in his *Economics in One Lesson* (the chapter “The Curse of Machinery”). The researcher argued that the fear of machines possibly taking away jobs from humans was irrational. The research presented by him proves that despite social anxieties, each revolution contributed to creating new jobs. This was connected with introducing many changes in work structure, like the liquidation of certain professions, which constituted the immediate cause for panic amongst workers, but eventually the economic situation of workers, employers and owners improved. The economist remarks that: “before the end of the nineteenth century the stocking industry was employing at least 100 men for every man it employed at the beginning of the century.”<sup>10</sup> The author addresses the events taking place during the first revolution, which affected significantly textile industry due to invention of power-looms. In response to the invention and changes connected therewith in England, a radical movement, called the Luddites, appeared. It became notorious for organizing night riots, described by Hazlitt in the following words:

New stocking frames as they were introduced were destroyed by the handicraft workmen (over 1,000 in a single riot), houses were burned, the inventors were threatened and obliged to fly for their lives, and order was not finally restored until the military had been called out and the leading rioters had been either transported or hanged.<sup>11</sup>

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<sup>9</sup> M. Xu, J. M. David, S. Hi Kim, *The Fourth Industrial Revolution: Opportunities and Challenges*, “International Journal of Financial Research”, 2018, no. 9(2), p. 91.

<sup>10</sup> H. Hazlitt, *Economics in One Lesson*, Introduction by W. Block, Ludwig von Mises Institute Auburn, Alabama, p. 34. Access: [www.ia801909.us.archive.org/22/items/HenryHazlittEconomicsInOneLesson/Henry%20Hazlitt%20Economics%20in%20One%20Lesson.pdf](http://www.ia801909.us.archive.org/22/items/HenryHazlittEconomicsInOneLesson/Henry%20Hazlitt%20Economics%20in%20One%20Lesson.pdf)

<sup>11</sup> Ibid.

The description leaves no doubt as to the fact that the movement was not restricted to occasional protests but took the form of a mass aggressive riot. Other sources say that because of the activity of the group in England, a law that protected machines and threatened the destroyers with death penalty had to be introduced. It resulted in executing 17 men in 1812.<sup>12</sup> Hazlitt described another movement, too — those who called themselves “Technocrats.” It originated during the second revolution, at the beginning of the 20<sup>th</sup> century, and popularized the conviction that machines were to be blamed for unemployment. Hazlitt remarks that mass-scale panic anxiety is periodical and it returns along with the next industrial revolution: “The Technocrats were finally laughed out of existence; but their doctrine, which preceded them, lingers on.”<sup>13</sup> He points out to the fact that Technocrats’ ideas were not new, but representative of a certain doctrine which had appeared before and were about, by all indications, to return later. Various actions of trade unions undertaken in the middle of the 20<sup>th</sup> century and insisting on creating new jobs were representative of that very doctrine.

The electrical union in New York City was charged with refusal to install electrical equipment made outside of New York State unless the equipment was disassembled and reassembled at the job site. Various locals of the painters’ union imposed restrictions on the use of spray guns, restrictions in many cases designed merely to make work by requiring the slower process of applying paint with a brush.<sup>14</sup>

At the same time, trade unions demanded the employment of substitutes ready to replace the workers already employed.<sup>15</sup> Such actions, motivated by the desire to create new jobs, caused many system damages, slowed the production and created situations in which workers happened to be idle the whole day. Those promoting that type of thinking and biased negatively against machines that accelerated production are characterized in *Economics in One Lesson* as ignorant of economy.

Noticeably, one of the first significant riots against technology was directed just against power-looms. To understand better how complex the phenomenon was, it seems convenient to focus on the machine. Hazlitt addressed the invention of Richard Arkwright’s cotton-spinning machinery, powered by water-wheel.<sup>16</sup> Another, and more complicated machine of the time was the Jacquard machine.

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<sup>12</sup> Wikipedia, the free encyclopedia, Luddite. Access: [www.en.wikipedia.org/wiki/Luddite](http://www.en.wikipedia.org/wiki/Luddite)

<sup>13</sup> H. Hazlitt, *op. cit.*, p. 34.

<sup>14</sup> *Ibid.*, p. 36.

<sup>15</sup> *Ibid.*

<sup>16</sup> *Ibid.*, p. 34.

The machine was controlled by a “chain of cards;” a number of punched cards laced together into a continuous sequence. Multiple rows of holes were punched on each card, with one complete card corresponding to one row of the design.<sup>17</sup>

The invention was heralded as the first programmed activity in history: holes were present or absent in the table corresponding to binary logic. The Jacquard machine can be thought of as belonging to prehistory of computers. The punched cards invented by Jacquard were subsequently used by Charles Babbage for constructing the calculating machine, which initiated speedy development of computer technique. Ada Augusta, collaborating with Babbage, stated that analytical machines “weave” algebraic patterns in the same way as the Jacquard machine does flowers and leaves.<sup>18</sup> Thus, the history of computers appears to be deduced from the history of looms; the same looms (which must be underscored) that provoked such numerous and aggressive protests. In this context, history seems to make a circle: computer technology, developed from the automatization of spinning techniques, provokes nowadays new waves of unrest and anxiety, described as Neo-Luddism. Modern fear of new technological possibilities (and of losing jobs too) seems to be the fear of — so to say — a “better loom.” In this metaphor, Hazlitt’s claim is confirmed again: a doctrine whose main assumption is the threat of machines replacing humans at work seems to be deeply rooted in culture and happens to periodically return in various guises.

## **To Dominate or to be Dominated. Great Duels**

A growing social fear of technology resulted in humans arranging every now and again the situation of a duel. It was meant to decide who was better. Probably, the main objective was to find the confirmation of human fear of machines too. On 10<sup>th</sup> February 1996, Garri Kasparow, the world chess champion, played a series of games with the program Deep Blue, winning eventually with this algorithm four to two. Despite the fact that Kasparow actually won, an information went viral that computer beat man in chess. Admittedly, people focused just on one game, keen to be told that technology vanquished man. That conclusion, along with fear of the evil-minded

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<sup>17</sup> Wikipedia, the free encyclopedia, Jacquard machine. Access: [www.en.wikipedia.org/wiki/Jacquard\\_machine](http://www.en.wikipedia.org/wiki/Jacquard_machine)

<sup>18</sup> Ch. Eames, *A Computer Perspective. Background to the Computer Age*, Cambridge Mass. 1990, p. 18, quote after: L. Manovich, *Język nowych mediów*, trans. P. Cypryński, Wydawnictwa Akademickie i Profesjonalne, Warszawa 2006, p. 85.

technology whose aim is to deprave, is likely to foster widespread panic. After the famous match, the program Deep Blue was improved and a new duel with Kasparow took place in 1997. This time, the computer won three to two and drew one game. The victory was not crushing, but the computer was granted superiority over the chess master. Experts stated then that it was impossible to create an algorithm able to win against man in the Go game because of its abstract character and lack of set rules of movement (contrary to what was the case in chess). A company DeepMind, owned by Google, created a program AlphaGo, which in March 2016 defeated the world champion Lee Sedol in a duel consisting of 5 games. The perfection of DeepMind consisted in that it used methods for programming neuron sets and applying huge database of the already played Go games (including those of Sedol). The program learnt by itself, basing on these data. In 2017, a documentary *AlphaGo* appeared, directed by Greg Kohs and presenting the event as a tale of man losing against computer. The example of narration built around a duel of humans with artificial intelligence as well as the very fact that such events proved to be in demand is but a tiny fraction of huge culture trauma of humans confronted with technology. To try to retell the Deep Blue and AlphaGo events in other terms, the perspective from which technology is perceived should be changed; technology should not be deemed separate and self-subsisting (or inimical) any more, but regarded as a human-technological hybrid instead. Each machine was created so as to function in relation to humans, serving as their extension and supplementing their possibilities. In this context, AlphaGo ceases to be a malicious, super intelligent program, but becomes a huge database of human reactions. The human aspect of technology is constantly removed from culture narration. The team of those who wrote and coordinated the working of an algorithm goes unnoticed; the same can be said of the people who faced Kasparow and Sedol, accomplishing movements proposed by the algorithm, as well as of the players whose games served as a base for the program. AlphaGo is based on, carries out and develops human games, intertwining the human with the technological.<sup>19</sup>

The proposal to perceive technology in hybrid categories has been formulated from the very beginnings of the computers and software development, to mention but one author: Joseph Licklider, who compared the relation of humans to computers to the symbiosis of a fig tree and a fig

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<sup>19</sup> Similar thinking might be transferred on the debate on programs creative of culture artifacts. Cf. O. Roeder, *There is no difference between computer art and human art*, "Aeon" 20.07.2016, [www.aeon.co/ideas/there-is-no-such-thing-as-computer-art-it-s-all-just-art](http://www.aeon.co/ideas/there-is-no-such-thing-as-computer-art-it-s-all-just-art) (access: 31.01.2019).

wasp, where each one supported the other's functioning.<sup>20</sup> The researcher Sonia Fizek, representing a similar strategy of thinking, built the famous metaphor of the Mechanical Turk, one of the automata from the 18<sup>th</sup> century. It was a figure of natural size, joined with the table and able to play chess games. The principle of its working had remained unknown for a considerable time, till the deck was lifted and a man who moved the chess figures was found inside. The example of the Turk reminds us that thinking of technology, we must not ignore humans who stand behind the scenes.

To sum up, although technology exists in relation to humans only, social fear, growing for centuries, compels us to perceive it as a separate, superhuman and self-reliant being, possibly inimical to humanity. Assuming such an image, humans deprive themselves of the possibility of critical approach, which could have questioned who stands behind a given item, who introduced it, who benefits from it, who created its program and whose data happened to be used. Afraid of the machine itself, one forgets about humans standing behind it. Only by accepting the concept of human- technological hybrid one is able to implement critical thinking and to ask these key questions.

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### **To Dominate or to be Dominated. About the Attitude of Humans to Technology in Modern Culture**

*Abstract*

The article presents historical aspects of thinking about technology in terms of dominating or being dominated. The terminological analysis, distinguishing the terms "robot" and "automaton," allowed for outlining different traditions from which they originated. The fear that machines will take work away from people has been proven to be cyclical in four industrial revolutions and their social perception; it has been demonstrated to occur regularly beforehand and likely to return. In the main part of the article, examples of duels between man and algorithm are presented and an attempt to propose a new model of thinking about technology as a human-technological hybrid is made.

*Keywords:* robot, automaton, anxiety, technological progress, relationship between man and technology.

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<sup>20</sup> S. Fizek, *Człowiek i algorytm. Ku automatyzacji rozgrywki w grach crowdsourcingowych*, trans. M. Wasilewska, "Teksty Drugie" 2017, no. 3, p. 21.