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Chatbots as an ethical challenge for contemporary psychotherapy

Czatboty jako wyzwanie etyczne dla współczesnej psychoterapii

SUMMARY

Technological progress, especially the development of digital media and artificial intelligence, affect many strategic areas of interpersonal communication and therapeutic services. The emergence of bots or programs using artificial intelligence in the field of psychotherapy, presents new ethical challenges to researchers and practitioners. In this context, it seems important to reflect on the essence of psychotherapy and the possibility of applying these new solutions in the context of interdisciplinary discussions on posthumanism, transhumanism and posthuman.

Key words: bot, artificial intelligence, psychotherapy

STRESZCZENIE

Postęp technologiczny, a zwłaszcza rozwój cyfrowych mediów i sztucznej inteligencji, ma wpływ na wiele strategicznych obszarów komunikacji międzyludzkiej i usług terapeutycznych. Pojawienie się botów, czyli programów wykorzystujących sztuczną inteligencję, w obszarze psychoterapii stawia przed badaczami i praktykami nowe wyzwania etyczne. Wydaje się w tym kontekście istotne podjęcie refleksji nad istotą psychoterapii oraz możliwością zastosowania nowych rozwiązań w kontekście interdyscyplinarnych dyskusji nad posthumanizmem, transhumanizmem i postczłowiekiem.

Słowa kluczowe: bot, sztuczna inteligencja, psychoterapia

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Introduction

When in the 20s of the previous century Karel Čapek wrote in his science fiction play entitled *Rossumovi Univerzální Roboti* about robots which replace people in doing difficult, arduous and repetitive jobs, his idea seemed to deserve quick implementation. In the epoch of the industrial society of the 1930s and then 1950s emphasis was placed on fast development of technologies which increased the effectiveness of human work and made it possible to replace the presence of man in the "frontlines" and "spheres" which did not require human intelligence, emotional sensitivity or using language. Technology in that period was effective, and many of its applications, especially in light and heavy industry, arms industry and construction outbalanced considerably physical and biological efficiency of man. At this stage of social development it was essential to use energy of machines effectively.

In the 1960s in Western European countries – thanks to a Japanese anthropologist – Tadao Umesao (creator of the concept) and sociologists of media (in Poland Tomasz Goban-Klas in the 80s) the term "information society", which means, generally speaking, the one in which the amount of GDP is largely dependent on effectiveness of human work based on IT technologies (Goban-Klas, 1999).

As a Spanish sociologist of media and economist Manuel Castells points out, in the 90s of the previous century we entered the era of informationism, since it is information and methods of its processing and storage that have become the driving force of social development on an unprecedented scale (Castells, 2010).

The structure of direct interpersonal relations has been completed or even replaced with a network of relations in the cyber-reality. In the web society and in reference to this phenomenon there started to appear psychological and sociological analyses, in which the authors used such terms as e-personality or e-identity (Turkle, 2005, 2013; Aboujaude, 2013). At present their frequency is becoming equal to the frequency of using the term e-service (e.g. in reference to such sectors as e-learning, tele-medicine, online therapy, e-shopping, electronic banking).

At the end of the second decade of the 21st century it is more and more frequently that one deals with the problem of Big Data[1], and in reference to the relation man – technology the post-humanistic or trans-humanistic paradigm is used (Hayles, 1999; Mahon, 2017). This conceptualization points out the processes of human cyborgization and psychological, medical, neurobiological, artistic and political consequences of this state of affairs (Ogonowska, 2018a).

Until the 1960s technology was definitely controlled by a human being, who analyzed the effects of their work and introduced further corrections. Two decades later, mainly in Western European countries, Japan and the USA there emerged first the idea, then prototypes and finally excellent solutions in the sphere of intelligent technologies, which could learn by their own mistakes and constantly self-improve. These technologies can even decide about the moment of their own destruction, when implementation of their operations becomes impossible or the system itself – ineffective.

Intelligent technologies

However, in the context of the above findings one can have doubts if a bot can be a partner in a therapeutic interaction? Can reports about effectiveness of the therapy using

1 Big Data is a relatively new term referring to big, changeable and diverse sets of data. Their processing and analysis is difficult and impossible without participation of technologies of large computing power. Processing this gigantic amount of information and its comparing or for example searching for correlations between different variables is very worthwhile, since operations on these sets can lead to gaining completely new knowledge and working out original solutions in a given service sector.

a computer program be the most important reason for applying this type of technological solutions on a large scale? Should economic considerations convince us to regard this kind of actions as a new form of psychotherapy?

These are questions starting a discussion on an impact of the contemporary media civilization on existing and planned forms of psychological help (Tryjarska, 2004). Within one article it is impossible to discuss all arguments for or against using technology in therapeutic communication. However, it is important to provoke deep reflection on this topic among representatives of different circles involved in this issue, also in the phase of production and implementation of inventions based on artificial intelligence.

Answers to these questions are essential also in reference to other ethical issues. If a program makes a mistake, who will be held responsible for such a state of affairs? The producer or the company/institution which offers such a service?

It goes without saying that the algorithm which is the basis for the functionality of a bot is the effect of cooperation between specialists in computer science (mainly programmers) and psychotherapy, who provide "feedstock" on basis of content to the program. Thus, we are dealing with the process of translation of the therapeutic language into a computer program and an algorithm and connected with it NLP engine activated at the moment when a bot starts a contact with a client/patient. There is no psychotherapeutic contact here, which does not mean that the user of the technology does not experience emotions and feelings in the course of the whole process, also in reference to the bot. It happens in spite of the awareness that it is not a contact with a human being. Currently used technological solutions (robots, bots) process enormous amount of data. They are also able to simulate, it would seem, typically human behaviors, such as: using language, reading communicative intentions of the interlocutor and controlling the conversation according to a definite plan/algorithm or reading complex emotions on the basis of facial expressions. By their highly specialized functionalities they make an impression that they have the ability to feel, have a little of a mind and even personality. Although the creators of intelligent technologies emphasize the fact that they have neither consciousness nor general intelligence, which makes them different from a human being, these abilities are, as it were, replaced or compensated for by algorithms. The latter ones enable the technology itself to make self-analysis of the effectiveness of its functioning ("internal audit"), also in reference to various environment parameters ("SWOT analysis"). The described technologies do not have a mind, but they can be compatible in communication with each other and also in interaction with man, who ascribes human properties to them (Revees, Nass, 1996).

Thus, using bots in psychotherapy requires renewed pondering over the role of unspecific factors which contribute to the effectiveness of applied psychotherapeutic techniques and are connected with the quality of interaction betfween a patient and the technology "providing assistance to them". As we know, traditionally (that is in the dyad patient/client – therapist) there was a connection between unspecific factors and a therapeutic relation created in the process of psychotherapy (cf. the aspect of therapeutic covenant). (Kleszcz-Szczyrba, 2010). So far there has been no research into this issue in reference to a therapy conducted by a bot. We are still at the stage of describing phenomena which are developing dynamically, in statu nascendi; their psychological effects are as yet the subject of single studies, which do not make a complete picture of the situation. (Whitty, Young, 2017, s.196-197).

Meanwhile, since the beginning of the 21st century in Asian countries, mainly in Japan and South Korea there emerge robots which are very similar to man, not only in terms of appearance but also patterns of behavior corresponding to previously programmed personality profiles. Technological

solutions affect social attitudes towards technologies themselves, which function not only as external support of human actions but also more and more often as an important component of internal life processes of man or man's moving in space (e.g. chips monitoring the level of hormones, blood pressure, body temperature; converters; exoskeletons, new generation prosthetics) [F1].

Ideas of a posthumanistic society become materialized and concretized very fast (Hayles 1999; Herbrechter 2013; Mahon 2017). Something that functioned as a literary or artistic futuristic project several years ago, is becoming everyday reality now or even – from the point of view of modern automation, robotics, generic engineering – a passe solution [F1].

Sharp development of computer science which started in 1960s has made the relations between technology and man as a social being much more dynamic. There appeared, also in humanistic thought, studies concerning an influence of media (at the beginning analog ones) on man's functioning, also in the social aspect. In the 1950s, until 1980s technological deterministes, under the leadership of Marshall McLuhan developed the idea of media as extensions of man's potential. At present these studies are being continued in reference to the digital reality of the web society by Derrick de Kerckhove and Paul Levinson (Ogonowska 2018 a). In response to these changes, at present there can be seen a dynamic development of research in the sphere of trans-disciplines, such as social informatics or cyberpsychology and in neurosciences. The context for these solutions – in reference to humanistic or social reflection – is more and more often post- or transhumanism as new paradigms of studies on the condition and future of man in the epoch of media civilization 5G[2].

Research on the impact of media: an outline of the issues

It was already at the stage of the classical McLuhan's research that technologies were perceived as means for optimization and broadening cognitive abilities of man. The dynamic development of cognitive psychology at that time was also to a large degree inspired by the so-called computer and calculative metaphor, the sources of which can be traced back to research work of Claude Shannon and Alan Turing.

On the other hand, in the mid-1970s there emerged a new scientific discipline, cognitive science, within which they wanted to integrate all fields of knowledge dealing with cognitive processes of man and their products. In this period there could be noticed first attempts of integrating psychology with computer science and the theory of artificial intelligence (Bobryk, 2001). Today they can be perceived as foundations of the development of affective computing or social informatics as well as solutions from the sphere of user experience.

In the second half of the 1990s, first within neurosciences and then at their intersection with cyberpsychology, they noticed the role of emotions as a factor intensifying man's involvement in the sphere of technology. This idea is rendered by the above-mentioned affective computing. Research into this issue was begun by Rosalind Picard in MIT and described in her book of 1997 entitled *Affective Computing* (Picard, 1997; 2014). The indicated field of research is of interdisciplinary character (computer science, psychology, automation, robotics, neurobiology) and it analyses the connection of emotions with relations between man and technology. These studies are not limited only to creating theoretical models referring to various forms of man's communication with the computer and people's communication with one another in the web environment, but also result in designing more and more perfect interfaces and computer programs. The latter ones facilitate effective

2 5 G technology – is the fifth generation technology, which is a revolution in the world of wireless connection and communication.

communication and achieving social, medical, therapeutic or economic goals. In turn, combining research from the sphere of cyberpsychology with neurosciences helps in studying neurocognitive, affective and social aspects of man's communication in conjunction with technology and solutions based on artificial intelligence.

Later development of cognitive science considerably revolutionized and reviewed classical assumptions of the 1960s. Dynamic development of research on artificial intelligence and digital media and their noticeable social utility, since the 1990s caused a significant increase of the number of studies and applications of new media, virtual and augmented reality (VR, AR), artificial intelligence (AI) in different sectors of social services. It also included journalism, education and therapy and broadly defined medical services. Picard's book is a good testimony of this revolution in thinking.

Apart from robots, at the turn of the 20th and 21st centuries there appeared their virtual equivalents, that is bots. They are computer programs which stimulate behavior, also communicative, of people, making it easier for them to use many services offered online in real-time. It was only in the second half of the 90s that psychological research showed that people approach new technologies as they approach other people, i.e. they get involved in a contact with a digital machine or they feel empathy towards avatars despite their declarations that – on the rational level – they know that they are only technological creations, resembling humanoid beings only in their reactions or appearance (Reeves, Nass, 1996). Later research shows that people give in to this illusion even if they hear only a technologically generated voice, simulating a conversation with a real human being (Colby, 1999).

Dynamic development of digital technologies since the second half of the 90s intensified interpersonal contacts of personal and formal (professional) character, also between people who had not known each other before from the offline environment (Ogonowska, 2016). Using these technologies has become common, especially among children and youth as well as young and the so-called middle-aged people. Thus, they have undergone peculiar naturalization, their constant presence in the social life made them become so natural that they seem invisible for their users.

At the same time, on the international IT market, thanks to, for example, such companies as Microsoft, Apple or IBM, one could observe the development of friendly interfaces and intensification of research concerning the so-called user experience.[3] Using new technologies was becoming more and more intuitive and adjusted to the needs and expectations of various groups of users, who did not have to have specialist IT and programming competence. It was enough that they were curious, ready to experiment and that they realized that the solutions offered on the IT market could considerably improve the comfort of their everyday life. Creators of new technologies could speak to potential users /consumers using the language of benefits (saving of time, money, physical energy, psychic energy, etc.).

Intuitiveness of the suggested solutions, especially since social media became widespread, stands in clear opposition to the necessity of developing more complex social or linguistic-communicative competence (Ogonowska, 2016). Users/creators of contents using – on a large scale – digital technologies also adapted to their functionality. The latter ones to a large degree 'formated' their mentality and communication patterns. As it has been emphasized before, the basic attribute of operations was availability, economy (of time and financial means) as well as virtual charakter (no necessity of coming into direct and often stressful contact with another person).

3 User experience – all of sensations which are experienced by the user while dealing with an interactive product.

From online therapy to bots

Forms of mediatised communication, which means technologically mediated online, have also penetrated therapy in the form of e-therapy or hybridized therapy, combining "traditional" psychotherapy based on direct contact between a specialist and a patient/client with different forms of mediated communication (chats, e-mail, conversation via Skype, etc.). These new media forms of treatment triggered controversy among therapists and researchers of new forms of psychotherapy, however, there were always a therapist and a person receiving psychological assistance present online or offline (Ogonowska, 2018). Another step is for instance Woebot, a computer program which is an example of a chatbot based on the principles of cognitive-behavioral therapy, which is supposed to help in treating depression or attenuating anxiety. Currently, as cyber-psychologists Monica T. Whitty and Gary Young point out, the so-called digital autochthons are totally different in their expectations from previous generations, since they look for health services online and interactions with new technologies, which are closer to them than people (Whitty, Young, 2017, p. 188).

Chatbots instead of a therapist

As it has been mentioned before, contemporary chatbots represent very much advanced computer programs, which simulate people's behaviors. They can hold a conversation in instant messengers (such as Messenger, Skype or Slack) or in windows like "live chat" on web pages www. The sector of psychotherapeutic services uses the so-called conversation chatbots, which use the "natural" language of a patient/client simulating a casual conversation. Creating this illusion is possible thanks to the so-called Natural Language Processing (NLP), which is able not only to "understand" the communicative intention of the interlocutor but also draw attention to the key syntactic and semantic parameters of their statement, significant for the therapy. A chatbot "reinforces" those which are important in terms of effectiveness of psychotherapy and at the same time "subdues" less essential or harmful ones.

A chatbot makes use of a rich corps of texts, thanks to which it can generate sentences not only in many different languages but also social dialects or even language "mixtures", such as Sponglish or Ponglish. Preparation of a good base of chatbot's knowledge is a long and time consuming process, comprising for example analytical and editorial work as well as consultations with experts. These actions ensure factual and linguistic correctness of every answer.

The idea of generating the natural language was born in Massachusetts Institute of Technology (Weizenbaum 1966, 1967; [F1]), where Weizenbaum created chatbot ELIZA for simulation of a conversation with a therapist. The chatbot "held" several conversations with patients in the spirit of Rogers's therapy. This simple system reacted to the so-called key words which appeared in a client/patient's statements and responded to them "contextually" . For example, when in the list of programmed key words there was "mother" and the person used this word in a statement addressed to ELIZA system, this person received a contextual feedback question concerning their family situation.

Later there were attempts to create a bot imitating the other party of a therapeutic contact, which means a client/patient. It was the main idea of PERRY program, which imitated communicative behaviors of a patient with paranoid disorders (Colby 1973, 1999). These initial designs already contained – of course on a lower level of advancement – solutions typical for contemporary conversational bots, which are used in psychological or speech therapy.

As it has been noticed by Abu Shawar, at the end of the previous century and at the turn of the 20th and 21st centuries there appeared many solutions of that kind, for instance: MegaHAL, CONVERSE, ELIZABETH, HEXBOT, or ALICE addressed to various

sectors of the market, from medical to entertainment. Each of these first names / proper names means something, e.g. ALICE stands for Artificial Linguistic Internet Computer Entity (Abu Shawar; Atwell, 2015). Giving human first names to programs has a significant psychological aspect. Users automatically anthropomorphize technology when they start interacting with it.

One of the latest projects representative for e-therapy based on gamification[4] is an online therapeutic game called SPARX. It was created in 2013 by research workers of Auckland University in New Zealand for its citizens and residents. This game, belonging to the fantasy genre, is addressed to young people who observe in themselves depressed mood or anxiety tendencies.

The game is preceded by a simple quiz, which allows the user's "self-diagnosis" and their taking a decision as for participation in the world of SPARX. Its name comes from the words: Smart, Positive, Active, Realistic, X-factor thoughts. The game is based on the assumptions of the cognitive-behavioral therapy. Each of the players is led by an AVATAR-bot, which explains the rules and encourages to gain two different types of competence (competence in acting/competence in thinking), necessary – according to the creators of the game – for overcoming problems in the real world. The avatar's statement also contains a clear suggestion that if the game does not help, it is necessary to contact a specialist in the offline world.

Further innovations aim at creating stronger and stronger illusion of communication typical for direct forms of interpersonal dialogue. In the context of the suggested solutions there arises a question about distinctive features of a therapeutic process, about necessary or sufficient features, which would decide about classifying a communicative situation as therapeutic.

In order to solve this problem one should refer to "classical" descriptions or definitions (Grzesiuk, 2005; Kępiński, 1972, Frankl, 1984), which have not faded at all.

Antoni Kępiński in his book *The Rhythm of Life* (1972) suggests a description of a psychotherapeutic contact from the perspective of a therapist. He writes there: (…) *sooner or later there comes a moment which we sense as a state of strange emotion or even joyous excitement: it is a moment of entering into "contact" with the patient. Then for the first time we can see the inner structure of the patient with the whole beauty of it. It is in a sense an aesthetic experience, similar to an ephemeral revelation which we experience when we are able to see the beauty of art or some landscape. One can say that in that moment a proper psychotherapeutic process begins, a process of mutual interaction of two people, which is to not only enrich their mental experiences but also stimulate to further development* (Kępiński, 1972, p. 297).

In this description there appear several essential categories, which are leading for the present considerations and decisions. Firstly, Kępiński uses the notion of 'psychotherapeutic contact' which is possible only in reference to an interpersonal relation; secondly, the result of this process is a change, which takes place on both sides (in the client/patient and in the therapist). Thirdly, at last the emotional aspect is touched upon, which is possible only in reference to human's affective reactions and never technologies.

In other considerations of clinical psychologists concerning psychotherapy there appears also an issue of interpersonal trust, which is a condition of creating a "helpful relationship" (Sęk, 1998, p. 369). In contemporary depictions, psychotherapy is described as a particular form of relationship between a patient/client and a therapist, which is intentionally used as a key way of treatment (Grzesiuk, 2005; Cierpiałkowska, Sęk, 2016). It is difficult to refer this relationship to technology.

4 Gamification – making use of mechanisms and logic of actions known for example from feature and computer games, for modifying people's behaviors in situations which are not games in order to increase their involvement and level of motivation.

In lieu of a summary

The issues touched upon in this paper are of a fundamental nature for the evaluation of the existing and dynamically developing services in the psychotherapeutic sector. They have been adjusted to the existing and ever-changing social expectations. These solutions, however, call for a new approach to the sphere of e-services, hitherto connected with face-to-face human contact (e.g. medical diagnosis, learning process, logopedic therapy, etc.). Due to the appearance of bots there is an effect of automation, homogenization of a certain process, which cannot be called a therapeutic relationship, although it may result in positive therapeutic effects. Statements from both practitioners and theoreticians of psychotherapy testify to this. Viktor Frankl, the creator of logotherapy and psychotherapy stated, as follows:

Psychotherapy of any kind must take into consideration two "unknown variables", which cannot be evaluated, with varying factors which cannot be accounted for: on one hand the patient's individuality, on the other, the doctor's personality. Each and every therapeutic approach must be modified depending on the patient's individuality and changed according to the doctor's personality. One should also take into consideration the fact that as far as the patient is concerned, the psychotherapy should not only be adjusted to his or her person but also be modified depending on his or her circumstances. One must never use ready-made formulas; there is never enough individualisation and improvisation (Frankl, 1984, p. 23).

Thus, the development of new technologies constitutes a significant ethical challenge for therapists who use them in their work and/or assume the role of an expert in creating new solutions in this sector of services.

There has been a quantum leap and revolutionary change in a relatively short period of time. First, online therapy sector appeared, followed by the application of the Net to hybrid therapies (Aouil, Rowińska-Władarczyk, Wrocławska, 2011; Ogonowska, 2018; Tantam, 2005). Subsequently, the therapist had been replaced by a computer programme. The next step, no matter how odd it might seem at the present stage of reflection, could be the replacement of the patient by his or her avatar. The avatar will – in such a scenario – be delegated to contact the bot in order to cope with the problems of the real user. It is the more possible because the conversational bot can have its graphic image called an avatar. The Internet users, however, very strongly identify themselves with their virtual representations. (Von der Pütten, Krämer, Gratch, Kang, Sin-Hwa, 2010) In this way, the trans-humanism project whose main character is a post-human or his or her virtual equivalent is carried out (Bostom, 2005; [F1]).

Bibliography

Aboujaude E. (2012). *Wirtualna osobowość naszych czasów. Mroczna strona e-osobowości*. Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego

Aouil B., Rowińska-Włodarczyk J., Rowiński T., Wrocławska E. (2011). Rozważania na temat kontekstu etycznego pomocy psychologicznej, w której wykorzystywany jest Internet. *Internet w psychologii – psychologia w Internecie*, B. Aouil, K. Czerwiński, D. Wosik-Kawala (eds.), Toruń: Wydawnictwo Adam Marszałek, 307–338

Bobryk J., Gibson J.J. (2001). Psychologia poznawcza i metodologia naukowych programów badawczych, *Przegląd Psychologiczny*, 44, 1, 73–84

Bostom N. (2005). In defense of posthuman dignity. *Bioethics*, 19, 3, 202–214

Castells M. (2010). *Społeczeństwo sieci*. Warszawa: PWN

Cierpiałkowska L., Sęk H. (eds.) (2016). *Psychologia kliniczna*. Warszawa: PWN

Colby, K. (1999). Human-computer conversation in a cognitive therapy program. Y. Wilks (ed.), *Machine conversations*. Boston / Dordrecht / London: Kluwer, 9–19

Colby, K. (1973). Simulation of belief systems. R. Schank, K. Colby (eds.), *Computer models of thought and language*. San Francisco: Freeman, 251–286

Frankl V. (1984). *Homo patiens*. Warszawa: PAX

Goban-Klas T. (1999). *Społeczeństwo informacyjne. Szanse, zagrożenia, wyzwania*. Warszawa: PWN

Grzesiuk L. (ed.) (2005). *Psychoterapia. Teoria*. Warszawa: ENETEIA Wydawnictwo Psychologii i Kultury

Grzesiuk L., Suszek H. (eds.) (2010). *Psychoterapia. Integracja*. Warszawa: ENETEIA Wydawnictwo Psychologii i Kultury

Hayles K. (1999). *How we became posthuman: virtual bodies in cybernetics, literature, and informatics*. Chicago: University of Chicago Press

Herbrechter S. (2013). *Posthumanism: a critical analysis*. London: Bloomsbury Publishing PLC

Kleszcz-Szczyrba R. (2010). „Pomagać sobą" – rozważania na temat czynników niespecyficznych w psychoterapii związanych z osobą psychoterapeuty. *Psychoterapia* 4 (155), 61–72

Kooche G.P., Keith-Spiegel P. (2008). *Ethics in psychology and the mental health professions. Standards and cases* (3rd edition), Oxford University Press

Mahon P. (2017). *Posthumanism: a guide for the perplexed*. London: Bloomsbury Publishing PLC

Ogonowska A. (2018). (Cyber)psychologiczne i medialne uwarunkowania psychoterapii indywidualnej online. *Psychoterapia* 3(186), 65–80

Ogonowska A. (2016). *Komunikacja i porozumienie*. Kraków: Wydawnictwo Edukacyjne

Ogonowska A. (2018a). *Psychologia mediów i komunikowania*. Kraków: Oficyna Wydawnicza Impuls

Shawar Bayan A., Atwell E. *Using corpora in machine-learning chatbotsystems*, https://www.researchgate.net/profile/Eric_Atwell/publication/233501081_Using_corpora_in_machine-learning_chatbot_systems/links/544ea2440cf29473161be63e/Using-corpora-in-machine-learning-chatbot-systems.pdf [12.12.2018]

Shawar B.A., Atwell E. (2015). ALICE chatbot: trials and outputs. *Comp. y Sist.* vol. 19 no. 4 México oct./dic.

Picard R. (1997). *Affective Computing* (vol. 252). Cambridge: MIT Press

Picard R. (2014). The promise of affecting computing. *The Oxford Handbook of Affective Computing*, 11

Postczłowiek (2017). *Polityka. Niezbędnik inteligenta*, 2.10.2017

Sęk H. (ed.) (1998). *Społeczna psychologia kliniczna*. Warszawa: PWN

Tryjarska B. (2004). Podstawowe zasady etyczne w psychoterapii. Brzeziński J., Toeplitz-Winiewska M. (eds.) *Praktyka psychologiczna w świetle standardów etycznych*. Warszawa: Academica Wydawnictwo SWPS, 117–131

Tantam D. (2006). The machine as psychotherapist: impersonal communication with a machine. *Advances in Psychiatric Treatment*, vol. 12, issue 6, November, 416-426

Turing, A. (1950). Computing machinery and intelligence. *Mind* 59, 433–460

Turkle Sh. (2005). *The second self: computers and the second spirit*. Cambridge, London: MIT Press

Turkle Sh. (2013). *Samotni razem: dlaczego oczekujemy więcej od zdobyczy techniki, a mniej od siebie nawzajem*, Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego

Von der Pütten, A. M., Krämer, N. C., Gratch, J., Kang, Sin-Hwa. (2010). "It doesn't matter what you are!". Explaining social effects of agents and avatars. *Computers in Human Behavior*, 26, 1641–1650

Weizenbaum J. (1967). Contextual understanding by computers. *Communications of the ACM*, 10 (8), 474–480

Weizenbaum, J. (1966). ELIZA. A computer program for the study of natural language communication between man and machine. *Communications of the ACM*, 10 (8), 36–45

Witty M., Young G. (2017). Online support and health care. *Cyberpsychology. The study of individuals, society and digital technologies*, UK: John Wiley & Sons

Filmography

[F1] *Współczesne cyborgi* (2017), reż. Rafel Duran Torrent.