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FEEDING THE ALGORITHM? STRATEGIES OF TECHNOSENSATION IN ARTISTIC PROJECT BASED ON BIO-PARAMETRISATION'S TECHNIQUES

Abstract: The article investigates various kinds of the strategies of technosensation in artistic project based on bio-parametrisation's techniques. The category of technosensation is in the article referred to the considerations of Luciana Parisi and Marie-Luise Angerer to define the relationship between body affectivity and computational systems (primarily in relation to automated decision-making systems and machine learning processes). The context for these considerations is the reflection on "technological redlining" as a strategy for racial, gender, and (dis)ability profiling of computational systems, which generate social exclusion, inequalities and oppressiveness. In the article, the author considers (with reference to the considerations of Parisi, Bernard Stiegler, Yuk Hui and Gabbrielle M. Johnson) to what extent the algorithmic biases are the result of automation, and to what extent they result from the absorption of uncertainty, randomness and technodiversity.

Technosensation strategies are considered in relation to the artistic practices of Zach Blas, Maja Smrekar, Marija Griniuk and others, pointing to subversive, critical and affirmative variants of technological functionality and agency. The presented projects prove that the functionality of computational technologies is not bipolar, but it is developing as a spectrum of nuanced mechanisms, both in the area of oppressive-exclusionary systems and emancipatory strategies.

Keywords: technosensation, algorithms, biometrics, race, disability, posthumanism

"Technological redlining" as a strategy for racial, gender, and (dis)ability profiling of computational systems

The emancipatory and oppressive/exclusionary effects of technology have long been pointed out in philosophical and media studies,[1] but it seems that these issues have

[1] To mention only the well-known reflections of Martin Heidegger or some of the findings of the Frankfurt School (Adorno, Habermas) regarding media technologies.

become much more pressing and ambiguous since technology began to develop algorithmic solutions with machine learning and artificial intelligence techniques. Safiya Umoja Noble states that "On the Internet and in our everyday uses of technology, discrimination is also embedded in computer code and, increasingly, in artificial intelligence technologies that we are reliant on, by choice or not. I believe that artificial intelligence will become a major human rights issue in the twenty-first century. We are only beginning to understand the long-term consequences of these decision-making tools in both masking and deepening social inequality."[2] The author therefore notes, on the one hand, the prevalence of technology's digital discrimination, already contained in the code itself, which also translates into the operation of tools and software that appear to be completely transparent, such as search engines or web browsers.[3] On the other hand, she believes that – despite numerous studies on these matters[4] – we are only just beginning to see, analyse, and understand the consequences of the exclusionary and oppressive effect of computational technology, which reinforces social inequality. Due to the fact that technologies based on algorithms, mathematical formulas, are not objective or neutral mechanisms, but ones that profile a new mode of sexism, racism, or ableism, they, according to Noble, become first and foremost an area of reflection on human rights. And what she therefore calls "technological redlining" becomes an increasingly important, actual basis of automated mechanisms and strategies, which most often comes down to the interests of certain social groups, and concerns, but also results from cognitively and culturally rooted prejudices and inequalities (e.g. on the labour market among different gender and ethnic groups),[5] as well as, for example, from the risk policy embedded in the biopolitical model.[6]

André Brock Jr., on the other hand, claims that "[…] whiteness is what technology does to the Other,"[7] meaning that technologies, which are considered universal and neutral tools, manifest whiteness as the basis of information systems that essentially exclude specific racial modifiers and become "white cultural commonplaces," markers of individual life in society and humanity in general. Brock Jr. analyses technologies understood in this way as a kind of libidinal economy,[8] which leads in economic

2 S. Umoja Noble, *Algorithms of Oppression: How Search Engines Reinforce Racism*, New York University Press, New York 2018, p. 1.

3 To read more, see: A. Brock Jr., *Distributed Blackness: African American Cybercultures*, New York University Press, New York 2020, pp. 38–78.

4 In addition to the publications cited in this article, it is also worth pointing to: S. Milan, *Social Movements and Their Technologies: Wiring Social Change*, Palgrave Macmillan, Basingstoke 2013 and one of the newest ones: D. Nemer, *Technology of the Oppressed: Inequity and the Digital Mundane in Favelas of Brazil*, MIT Press, Cambridge 2022.

5 S. Umoja Noble, op. cit., pp. 1–2.

6 See e.g.: G. Delanty, *Biopolitics in the Risk Society: The Possibility of a Global Ethic of Societal Responsibility* [in:] P. O'Mahony (ed.), *Nature, Risk and Responsibility: Discourses of Biotechnology*, Routledge, New York 1999.

7 A. Brock Jr., op. cit., p. 1.

8 Ibidem, pp. 40–42, 75–78.

and social practices to a pejorative perception of non-white users, or, conversely, focuses on glorifying the resistance strategies they have generated for themselves against this universal model.[9] Both solutions in fact maintain the racial foundation of technological mechanisms. Reflecting on the polarity of this reflection, Brock Jr. focuses on the operation of web browsers, which he considers to be "racial epistemology," new cognitive strategies based on computational mechanisms that are racially profiled and coded, assuming the hegemony of whiteness and most often accompanying masculinity. This manifests itself, for example, through the different types of information available to users of different browsers, which depends on assumptions about the specific race and ethnicity of potential users.[10] In this context, the attempt at a technological specification for people of colour, in a sense, is always considered a kind of resistance, a niche that, on the one hand, can be an emancipatory strategy. However, on the other hand, it perpetuates as a universal and basic rational model of the white base of computer technologies. This is why it is so important not only to take a critical view but especially to shape technology from a black technocultural perspective in the form of initiatives such as the Blackbird browser, which functions as a technological type of cognitive strategies that reintegrate African American history and activity into socio-cultural heritage.[11] Keith Obadike, in his project "Blackness for Sale," an eBay page, has also pointed out that, on the other hand, the "niche nature" of blackness has also become cultural capital and has produced a kind of homogenised experience of technology that most often incorporates blackness on the basis of stereotypical presuppositions about identity.[12] This means that in these kinds of solutions, "blackness" also becomes a kind of racial coding, rather than a model of emancipatory strategy or a mechanism of social inclusiveness.

Most researchers working on this issue note that at the heart of such opportunities to use technology lies the automation that is inherent in computational systems.[13] Noble herself, in analysing racist technologies, describes them as "automated decision-making systems" which, on the one hand, fetishise the belief in transparency, and therefore the reliability and unquestionability of technological action (including the representation of social identities) and, on the other hand, are simultaneously accused of a purely mechanical and computable reduction of existential qualities.[14] In turn, Brock Jr. notes that: "[…] the internet's base purpose is to behave as a ration-

[9] Ibidem, pp. 7–10.

[10] Ibidem, pp. 37–38.

[11] See the Webpage of Blackbird Web Browser to downloading: https://download.cnet.com/Blackbird-Web-Browser/3000-2356_4-10912569.html (accessed: 10.06.2022).

[12] See the Website of the project: https://elmcip.net/creative-work/blackness-sale (accessed: 8.06.2022).

[13] See also in this context: M. Liljefors, S. Lundin, A. Wiszmeg (eds.), *The Atomized Body: The Cultural Life of Stem Cells, Genes, and Neurons, Nordic Academic Press*, Nordic Academic Press, Lund 2012; A. Lowenhaupt Tsing, *On Nonscalability: The Living World Is Not Amenable to Precision-Nested Scale*, "Common Knowledge" 2012, vol. 18 (3).

[14] S. Umoja Noble, op. cit., pp. 46–49.

al, productive information space because of its association with whiteness,"[15] which points to the basic, structural shaping of computer systems as those reflecting a Western vision of rational, unambiguous, objective and reliable technological solutions. Within mainstream technologies understood in this way, race, ethnicity, sexuality, and lack of disabilities are coded at the source.

These issues are particularly relevant in the area of so-called bio-parametric technologies, which I focus on most in this article. The historical basis of contemporary techniques of body parameterisation, i.e. the various variants of anthropometry, were already considered to be "arithmetic violence" procedures that profiled racism and other forms of social exclusion, among others shaping normative principles in relation to physical and intellectual performance.[16] Modern techniques, of which algorithmic biometric procedures (e.g. facial recognition technique[17]) and self-tracking (measuring and controlling one's own physiological processes[18]) seem to be the most evident, have developed these methods significantly. Monitoring of body condition, control of its functioning, as well as all identification techniques – as Shoshana Amielle Magnet describes extensively – are always based on a fairly constant element of normativisation: the reference of the measured body to specific classifiers – genotypic, phenotypic, and behavioural patterns that operate in many huge databases (such as EURODAC[19]) of numerous state and commercial institutions.[20] The assumption is that biometric identification techniques are to be objective, based on mathematical formulas, and therefore fully computable and reliable. However, as Björn W. Schuller proves, biometric technologies never perform such functions as they actually conceal political conditions and the interests of various institutions or corporations, but also the very nature of the development of machine learning techniques.[21] The large-scale fetishisation of computerised identification sustains the myth of technological neutrality in this context, producing a contemporary variant of hybrid (digital-biological), somatic identities within it.

15 A. Brock Jr., op. cit., p. 7.

16 G.W. Lasker, *The Place of Anthropometry in Human Biology* [in:] S.J. Ulijaszek, C.G.N. Mascie-Taylor (eds.), *Anthropometry: The Individual and the Population*, Cambridge University Press, New York 1994, pp. 3–5.

17 K.A. Gates, *Our Biometric Future: Facial Recognition Technology and the Culture of Surveillance*, New York University Press, New York 2011, pp. 25–26.

18 To read more: G. Neff, D. Nafus, *Self-Tracking*, MIT Press, Cambridge–London 2016.

19 See: I. van der Ploeg, *The Illegal Body: 'Eurodac' and the Politics of Biometric Identification*, "Ethics and Information Technology" 1999, vol. 1, no. 4, p. 301; and the website of EURODAC: https://knowledge4policy.ec.europa.eu/dataset/ds00008_en (accessed: 9.06.2022).

20 S.A. Magnet, *When Biometrics Fail: Gender, Race, and the Technology of Identity*, Duke University Press, Durham–London 2011, pp. 127–128.

21 B.W. Schuller, *Multimodal Affect Databases: Collection, Challenges, and Chances* [in:] R.A. Calvo, S.K. D'Mello, J. Gratch, A. Kappas (eds.), *The Oxford Handbook of Affective Computing*, Oxford University Press, New York 2015, pp. 323–333.

Trevor Paglen and Kate Crawford, in their project "ImageNet Roulette," further developed these findings, showing that the object classifiers that underpin machine-learning systems are based on prejudices and exclusions of race, and gender, but also located in the rhetoric of hate speech. Testing the ImageNet database created in 2009, widely used to train artificial intelligence systems, based on the analysis of photos of people in relation to facial recognition systems, intended for scientific and social research, as well as for public institutions and individual subjects, they proved, among others, that photos of people with non-white skin colour were assigned racial classifiers, while white people were mainly assigned occupational classifiers. And classifiers such as "criminal" or "infidelity" were not only socially damaging, they were usually based on randomly assigned parameters of gender and race.[22] Thus, they showed that the image database, which is used in machine learning based on visual-centric culture, is a powerful mechanism for profiling social inequality. The "Gender Shades" project, carried out by the founder of the Algorithmic Justice League (AJL), Joy Buolamwini from Ghana, demonstrated the lack of precision in determining gender parameters (due to normativisation patterns) when analysing the performance of gender classification systems offered by three major IT companies (IBM, Microsoft and Face++) when one of the variables was race/ethnicity.[23] These results, in turn, translate into inequality in work organisations, health care issues, and more. Research by Michal Kosinski and Yilun Wang from 2018 has shown, on the other hand, the rather (statistically) high precision of algorithmic systems in determining sexual orientation, which, as the researchers prove, precisely for this reason becomes the basis for social exclusions, but also an automation-based, and therefore "irrefutable proof" of crime, in countries where non-heteonormative identity is punishable.[24] One of the most radical ideas expressing the consequences of these processes is presented by Ruha Benjamin, stating that race itself has become a kind of technology, being technologically generated and defined, but also often determining the design of technology.[25] The resulting automated replica of the body, based on measuring systems, enmeshes it in a web of increasingly complex biopolitical interrelationships in which the self-agency of machines is only one of the foundations.

The very role of automation in shaping various forms of technological exclusion, reductionism and oppression is difficult to question. However, in my considerations,

[22] See the website of the project: https://www.chiark.greenend.org.uk/~ijackson/2019/ImageNet-Roulette-cambridge-2017.html (accessed: 2.06.2022).

[23] See the website of the project: http://gendershades.org/ (accessed: 2.06.2022).

[24] Y. Wang, M. Kosinski, *Deep Neural Networks Are More Accurate Than Humans at Detecting Sexual Orientation from Facial Images*, "Journal of Personality and Social Psychology" 2018, vol. 114 (2), pp. 246–257.

[25] R. Benjamin, *Race after Technology: Abolitionist Tools for the New Jim Code*, Polity Press, Cambridge 2019, pp. 69–75. This projects of Joy Buolamwini I also mentioned in my publication: *Sztuka biometryczna w perspektywie filozofii post- i transhumanizmu. W stronę estetyki postafektywnej*, Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2021.

I would like to go beyond the rather common (evident also among the researchers I cited above) conviction about the completely computable and rational operation of computer technologies, referring to the concept of technosensation, developed by Luciana Parisi and Marie-Luise Angerer. This concept proves that today's advanced technologies have been able to operationalise incomputability and randomness for a long time, and it is this fact that both the inclusiveness and exclusiveness of the technology result from. As I will prove in the next part of this article, this perspective is important for several reasons. Firstly, it leads to questioning the belief in the exclusively mechanical and instrumental functioning of technology, pointing to the structural similarity and permeability of computer systems and body-mind affectivity. Secondly, it identifies the actual scale of both the exclusionary and emancipatory action of technology, the basis of which is not just a simple reduction of existential qualities, but a variety of strategies for the incorporation of what Parisi describes as "uncertainty." Finally, this approach recontextualises the importance of both the scale of technological causality and the relationship between technology and the organic milieu.

These seemingly mutually exclusive functions of computing technologies (including bio-parametric ones), which Parisi and Angerer explicitly point out, instead clearly reveal their complexity, but also the multidirectionality of their use, which is not always located at the two poles – empowerment and exclusion – but most often occupies an intermediate space, significantly nuancing it. This space is explored by new media artists, who test in their projects the "technological redlining" of algorithmic systems and the very meaning of technological autonomy and agency. In the further part of my considerations, I will focus on a number of such projects based on bio-parametric techniques, which diagnose in various contexts the problem of computational and algorithmic exclusion, and those which, such as the works of Maja Smrekar, pursue variants with a specifically subversive potential towards them, aimed at transcending obvious polarities in the experience of technology.

"Technosensation" as a model of the relationship between technology and the organic milieu

An important development and addition to the prevailing reflections on the exclusionary effect of computer technologies (including bio-parameterisation techniques, which I am particularly interested in) is presented by Luciana Parisi. In this context, the author introduces the concept of technosensation[26] and analyses the relationship between instrumental reason, algorithmic capitalism, and the incomputable, which allows her to establish a framework within which technology constitutes the tools

[26] L. Parisi, *Digital Automation and Affect* [in:] M.-L. Angerer, B. Bösel, M. Ott (eds.), *Timing of Affect: Epistemologies, Aesthetics, Politics*, diaphanes, Berlin 2014, pp. 161–177.

of technocapitalist reduction of existential qualities.[27] I will present this concept in more detail, because it will constitute a fundamental reference point for the artistic strategies that are of interest to me, introducing an important research perspective in the reflection on the assimilative and/or reductive/exclusionary role of bio-parametric techniques.

An important problem of the functioning of computing machines and technosensation techniques is algorithmic cognition ("algorithms are grounding a new mode of thought and control"[28]), which – due to automation – according to numerous researchers of critical theories of technology, causes the reduction of human thought processes (and life processes in general) to purely mechanical operations, and thus the exclusion of incomputability and randomness. These findings are based on the conviction of the radical incompatibility of the human affective sphere (understood as an enclave of uncertainty, potentiality, and singularity) with discrete-based machines of universal calculation, as Deleuze, among others, has described them in the context cited above.[29] Parisi, on the other hand, in connection with such a targeted reflexion, raises the question: "Can one truly argue that algorithmic automation is always already a static reduction of critical thinking?"[30] and, citing Gregory Chaitin's information theory, argues against critical theory and concludes that "technocapitalism is infected by computational randomness and chaos."[31] Consequently, the diagnosis of the digital automation processes (especially in terms of operationalising affectivity as the fundamental basis of existential qualities) cannot be unambiguous, and the consequences of these processes in terms of assessing the exclusionary and reductive functionalities of technology are very complex and particularistic.

It is also worth noting, as Parisi herself does in the article cited here, but also in a paper written with Denise Ferreira da Silva,[32] that her research proposal is partly polemical with the reflection of Bernard Stiegler,[33] and the continuator of his thought, Yuk Hui,[34] on the essence of technodiversity. Parisi argues against Stiegler's belief that "[…] technocapital is what denies desire and knowledge, reason and sensation,"[35] and, citing the findings of Maurizio Lazzarato and Brian Massumi, concludes that the essence of the operation of systems of digital automation of existential qualities

[27] L. Parisi, *Instrumental Reason, Algorithmic Capitalism, and the Incomputable* [in:] M. Pasquinelli (ed.), *Alleys of Your Mind: Augmented Intelligence and Its Traumas*, Meson Press, Lüneburg 2015, pp. 125–137.

[28] Ibidem, p. 125.

[29] G. Deleuze, *Difference and Repetition*, Athlone, London 1994, p. 68.

[30] L. Parisi, *Instrumental Reason…*, op. cit., p. 126.

[31] Ibidem, p. 125.

[32] L. Parisi, D. Ferreira da Silva, Black Feminist Tools, Critique, and Techno-poethics, "e-flux" 2021, no. 123, https://www.e-flux.com/journal/123/436929/black-feminist-tools-critique-and-techno-poethics/ (accessed: 11.06.2022).

[33] B. Stiegler, *Noodiversity, Technodiversity*, trans. D. Ross, "Angelaki" 2020, vol. 25 (4), pp. 67–80.

[34] See for example: Y. Hui, *Writing and Cosmotechnics*, "Derrida Today" 2020, vol. 13 (1), pp. 17–32.

[35] L. Parisi, *Instrumental Reason…*, op. cit., p. 128.

(including the systems of bio-parametrisation of affects that interest me) is: "quantification to the indetermination of the environments,"[36] "[…] a mode of calculation of potential tendencies instead of existing possibilities." "[…] Instead it aims at calculating the unknown as a relational space by measuring the interval between one existing data and another. This form of pre-emptive calculus indeed transforms the limit point of this calculation – infinities – into a source of capitalization."[37] She thus argues with Hui's belief that technodiversity is a counterweight to the hegemony of universal, technological calculability, manifested in the relationship between the technical procedures and the social and biological systems.[38]

In Parisi's view, technodiversity is an essential basis for processes of capitalization, since it is diversity, potentiality and incalculability that constitute the technological "breeding ground," and the openness of systems is not a contradiction of mechanisation and automation, but its essential, desirable element that essentially recontextualises their functionality. It thus recognises that an important, and often overlooked, variant of how computer processes work is the fact that: "[…] the incomputable function of reason has entered the automated infrastructure of cognition," and the essential question to be asked is "the question of the incomputable in algorithmic automation"[39] – not about whether, but about how computer systems use and process the areas of incomputability, randomness and uncertainty, for which affective body-mind functions are an important basis in bio-parameterisation techniques.

Following Parisi's finding, it should be noted that the strategies of technological processes of exclusion and reduction, but also, for example, of shaping affirmative communication platforms, do not result from the denial or elimination of incomputability, randomness and uncertainty, but rather from various techniques and procedures for assimilating (also affective) diversity and potentiality so that they become an increasingly rich source for multimodal systems based on machine learning and artificial intelligence. The inclusion of randomness and potentiality in computer systems reveals the internal dynamics of automation processes, in which the relationship between the source of data, its circulation, and the effect of procedures (as in the case of the bio-parameterisation techniques I am interested in – between the body and the circulation of data in multimodal systems and their socio-political consequences) takes different relational forms. In other words, Parisi demonstrates that computational technologies based on automation/algorithmisation are not only (although this is most often the case) tools for the reduction of existential qualities and thus techniques of exclusion, but in some cases also shape "a new alien mode of thought"[40] as well as procedures and systems that do not have to pose a mere threat to affectivity in

[36] Ibidem, p. 129.
[37] Ibidem, p. 128.
[38] Y. Hui, Writing and Cosmotechnics, op. cit., p. 30; idem, For a Planetary Thinking, "e-flux" 2020, no. 114, https://www.e-flux.com/journal/114/366703/for-a-planetary-thinking/ (accessed: 12.06.2022).
[39] L. Parisi, *Instrumental Reason…*, op. cit., p. 127.
[40] Ibidem, p. 136.

the form of mechanical instrumentalisation. Potentiality and uncertainty are the most important breeding ground for contemporary technologies, but at the same time they offer the possibility of breaking down these systems from the inside, giving them subversive meanings. This does not mean creating a counterweight to them on quite simple principles (as Stiegler and Hui propose in this context), but differentiating within the computer systems themselves.

It also results from – polemically with Deleuze's reflection – the congruence of the affective and computational spheres, which Parisi describes as (just mentioned by me) "technosensation." According to Parisi, the opposition between affect and computation is apparent because it is extremely easy to rework affective data into bundles of energy that are recognisable and perfectly operational in computer systems; to treat affective data as discrete units. Instead, automation understood as the dynamic model it postulates, is central to contemporary systems and non-systemic mechanisms (which I consider to be, for example, numerous tactical media activities) based on the capitalisation of affect.[41] "Techno-ecology of sensation" defines in this context the various circulatory processes on the energy-information line,[42] the centre of which in biometric processes are bio-mediated bodies.

Marie-Luise Angerer, developing Parisi's concept and recalling the findings of sensualist epistemology (e.g. following the findings of Isabelle Stengers[43]), observes that the techno-ecologies that take shape in this way are based on "[…] the emergence of distributed sentience." Instead, the key question is how the networks of relationships between organic environments and technologies change "[…] when algorithms are cast as sentient beings and when 'smartness' denotes a comprehensive capacity to both encode and decode feelings."[44] However, in my opinion, this does not imply either affirmative (and somewhat naive) posthumanist thinking about algorithms as others, or a full, collision-free entanglement between organic and inorganic entities.[45] Nor is this an attempt to return to the enthusiastic identification of binary code and DNA, which is still inspiring but repeatedly criticised.[46] Both Parisi and Angerer (but also Nancy Katherine Hayles, whose concept of unconscious cognition

41 L. Parisi, *Digital Automation…*, op. cit., p. 174.

42 L. Parisi, E. Hörl, *Was heißt Medienästhetik? Ein Gespräch über algorithmische Ästhetik, automatisches Denken und die postkybernetische Logik der Komputation*, "Zeitschrift für Medienwissenschaft: Medienästhetik" 2013, no. 8, p. 40.

43 I. Stengers, *Wondering About Materialism* [in:] L. Bryant, N. Srnicek, G. Harman (eds.), *Speculative Turn: Continental Materialism and Realism*, re.press, Melbourne 2011, pp. 368–380.

44 M.-L. Angerer, *Affective Milieus: Intensive Couplings, Technical Sentience, and a Nonconscious In-between* [in:] B. Bösel, S. Wiemer (eds.), *Affective Transformations: Politics – Algorithms – Media*, Meson Press, Lüneburg 2020, p. 91.

45 More about this: E.H. Giraud, *What Comes after Entanglement? Activism, Anthropocentrism, and an Ethics of Exclusion*, Duke University Press, Durham–London 2019.

46 See e.g.: M. Składanek, *Sztuka generatywna. Metoda i praktyki*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2017, p. 186.

is the starting point for these reflections[47]), rather wonder how thinking about the reductive properties of technology, about the systems of exclusion that technological systems generate, changes at a time when we can no longer consider them as a purely mechanical means of reduction of existential qualities, as automation devoid of incomputability, randomness and uncertainty; when we must also consider the question of "unconscious cognition" in the context of technological entities.

The question thus posed would be very difficult to answer unequivocally and none of the researchers cited attempt to do so. Moreover, techno-ecologies seen "as open and reversible rule-based systems"[48] also do not imply a "magical healing" of technology from processes of generating exclusion and racial, ethnic, gender, or species oppression. Instead, they point to a much more difficult and complex basis for techno-sensory relationality that does not rely on symmetrical, unambiguous, objective patterns of affective-computational interpenetration.

The concept of "technosensation" also seems to complement the well-known reflection of Rosi Braidotti (and other scholars in the field of critical posthumanism) on the processes of "becoming-with-technology", which implies processual, gradual assimilation with technologies – one of the fields of "transversal inter-connections"[49]. Meanwhile, many of the relationships taking place with technologies are momentary, abrupt, radical (to take the example of deaf people's first contact with hearing aids[50]). In the bio-parametric processes of interest to me, relationality is sometimes structural, and ontogenetic (as in medical imaging procedures), but most often it does not imply a harmonious, symmetrical coexistence, but constitutes a kind of translation or reconstruction of data in which it is no longer only a matter of "contact with the Other", or let alone a simple mechanical reproduction of a digital body, but the negotiated production of a new construct in algorithmic processes based on incomputability, randomness and uncertainty. Both the reductive and exclusionary, as well as the affirmative, emancipatory or relational functions of technology are then radicalised by including the spheres of potentiality, speculativity and prediction in the field of algorithmic coding or machine learning.

Questions of technocapitalist reduction of existential qualities in the projects created by Zach Blas and Maja Smrekar

In this part of my considerations, I would like to look at how artists using bio-parameterisation strategies diagnose the exclusionary and (dis)emancipatory profile of bio-

[47] N.K. Hayles, *Unthought: The Power of the Cognitive Nonconscious*, The University of Chicago Press, Chicago–London 2017.

[48] M.-L. Angerer, *Affective Milieus…*, op. cit., p. 93.

[49] R. Braidotti, *The Posthuman*, Polity Press, Cambridge 2013, p. 45.

[50] See more: M. Zdrodowska, *Telefon, kino i cyborgi. Wzajemne relacje niesłyszenia i techniki*, Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2021, pp. 84–87.

metric technologies. The example projects I have selected point to two of the many important trends in this area: firstly, the creation of a strategy of technological resistance to bio-parameterisation, seen explicitly as a tool of technocapitalist reduction of existential qualities, and secondly, the realisation of a posthumanist manifesto in the area of a design trend called Animal/Plant/Microbes Computer Interaction, which transforms bio-parameterisation into a platform for human-non-human experience.

Zach Blas is one of the artists who consistently test and criticise bio-parameterisation systems, pointing out their discriminatory and reductive nature. In his most famous work, "Face Cages," he designed a kind of performance in which four artists faced the physical pain caused by specific types of information cages placed on their faces. These "cages" were generated from facial parameters taken in a face recognition procedure, and the pain they caused indicated the imprecision of these measurements, occurring as a result of the normativisation mechanisms to which the body is subjected in biometric identification systems.[51] In my reflections, however, I would like to point to another project by Blas, the latest of those dedicated to biometrics ("Profundior" is announced for June 2022): "Sanctum," in which Blas indicates, in the convention of torture and horror that is characteristic of his works, to what extent affectivity, the potentiality of the body becomes a breeding ground for computer technologies.

In "Sanctum" from 2018, Blas addressed the parameterisation of sexuality through biometric technologies; in the case of this project, these were the apparatuses and procedures of airport body scans with which biometric analysis and predictive policing are implemented.[52] This issue has been addressed by artists before, such as in Shu Lea Cheang's excellent project "3×3×6," in which the artist problematised the issue of measurement and algorithmic procedures that normatise gender identity and sexuality.[53] Blas, however, creates a different perspective than Cheang, pointing metaphorically to the parallels between masochistic-sadistic desires and human functioning in the realm of digital surveillance, platforms that generate digital replicas of the body. Serving as a basis for the project, designs of "generic mannequins," are the "corporate term for digital representations of bodies that are examined for risks and anomalies during airport body scans."[54] These characters have been deliberately stripped of any bodily features that could be an important parameter for biometric procedures. As parametrically worthless digital replicas, they are subjected to a variety of tortures (stretching, puncturing, etc.) that, through the suggestion of associ-

[51] I analysed this project in my book *Sztuka biometryczna w perspektywie filozofii post- i transhumanizmu…*, op. cit., and these were also analysed by Maciej Ożóg in the book: *Życie w krzemowej klatce. Sztuka nowych mediów jako krytyczna analiza praktyk cyfrowego nadzoru*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2018.

[52] See the website of the project: https://zachblas.info/works/sanctum/ (accessed: 28.05.2022).

[53] I write more about this project in the book: *Sztuka biometryczna w perspektywie filozofii post- i transhumanizmu…*, op. cit.

[54] See the website of the project: https://zachblas.info/works/sanctum/ (accessed: 28.05.2022).

ation with BDSM, criticise oppressive technological measures that fit the body to specific patterns and classifiers so that it meets the accepted biometric measurement standards. In addition to a large number of databases, the measurement standards in the identification systems used are also reinforced by the Body Action and Posture Coding System models, the Nonverbal Behavior Coding System, or, in the case of face research, the Facial Action Coding System.[55] Also relevant to Blas's project is the indication that in numerous situations, platform users condemn themselves to biometric torture, consciously or not, by transferring their biodata to various databases and systems – hence the association with masochistic activities.

The measurement situation at the airport itself, using so-called "naked scanners" based on millimetre wave technology, is also important because, as many biometrics researchers argue,[56] it creates a specific environment of condensed global social inequality (a similar status can be attributed to border crossings), based on a biopolitical exclusion in terms of migration, gender, race and, in the case of the coronavirus pandemic, also health, which is further reinforced by the risk policy (the issue of the accusation of terrorism, which is widely discussed in the report "Use of Biometric Data to Identify Terrorists: Best Practice or Risky Business?" (2020)[57], the issue of eliminating the pandemic threat, etc. In the context of the policy of threat, the practices of biological parameterisation are most relevant to social minority groups (ethnic, religious, racial), but also to people subjected to various forms of deterritorialisation: refugees, immigrants, political asylum seekers.[58] Automated identification systems mean that the biological authenticity of data then becomes an indicator of the reliability of security procedures, including those related to the threat of terrorism.[59] This issue is also developed by Blas in another 2018 project "Body Horror" – "a lecture-performance that reimagines airport security through the genre of body horror cinema, with millimeter wave body scans and biometric diagrams as key protagonists."[60] The fundamental question posed by the project is the question about the kind of digital violence and aggression, which does not in any way involve bodily harm – characteristic of the horror genre. By fitting the measurement situation into a popular pop culture convention, Blas thus returns to the problem of "arithmetic violence" that has been repeatedly described in the subject literature.

[55] N. Dael, M. Mortillaro, K.R. Scherer, *The Body Action and Posture Coding System (BAP): Development and Reliability*, "Journal of Nonverbal Behavior" 2012, vol. 36 (2), pp. 97–121.

[56] See e.g.: M. Liljefors, L. Lee-Morrison, *Mapped Bodies: Notes on the Use of Biometrics in Geopolitical Contexts*, "Socioaesthetics" 2015, vol. 19 (2), pp. 53–72.

[57] See the website: https://www.kpsrl.org/publication/use-of-biometric-data-to-identify-terrorists-best practice-or-risky-business (accessed: 20.05.2022).

[58] S.A. Magnet, op. cit., p. 128 and others.

[59] A. Ceyhan, *Technologization of Security: Management of Uncertainty and Risk in the Age of Biometrics*, "Surveillance & Society" 2008, vol. 5 (2), p. 114.

[60] See the website of the project: https://zachblas.info/works/body-horror/ (accessed: 28.05.2022).

In the context of the specificity of the "airport situation" or, more broadly, of the migration policy, the creation of "digital mannequins" deprived of biometric features in Blas's projects is one of the strategies of resistance to parametric technologies that the artists employ (an analogous solution appears in another Blas's project entitled "Facial Weaponization Suite" and in the already mentioned "3×3×6" project). This technique does not mean subversivisation in the strict sense of that category, but the production of "tactics of disappearance"[61] – an attempt to stop the biometric machine. However, the method is specific in that it simultaneously involves an absolute reduction of body parameters, a negation of the "technodiversity" postulated by Stiegler and Hui. Referring to Parisi's concept, it can be said that the stopping of this "machine" in Blas's project is actually due to the elimination in the measurement material of all manifestations of potentiality, randomness, and uncountability, which algorithmisation feeds on. It is thus a seemingly paradoxical situation in which radicalised digital reductionism becomes a strategy of resistance to the techno-capitalist machine of absorbing the affective body.

A different kind of creative strategy using the tools and methods of bio-parameterisation was proposed by Maja Smrekar, a Slovenian artist, who is, I believe, best known for her project series "K-9_topology: ECCE CANIS" that indicated the relationship between man and dog. In this reflection, I would like to analyse the artist's latest project "!brute_force", realised in 2019–2020 and presented as a performance during the "Ars Electronica" festival in 2020.[62] Smrekar defined the concept of her project, stemming from her observation of the disturbing hierarchical categorisation of living beings, in the following way: "On the one hand, the '!brute_force' project therefore represented the canine and human bodies as reduced abstractions within total corporate knowledge and control of bodily functions. But on the other hand, the project suggested possible paths of resistance, by imagining the human-with--animal-with-technology coexistence in a state of joint physical activity," also asking questions that were very relevant to the concept of technosensation I referred to: "How much the ownership of the body and the self are possible through augmented reality and the principles of uncertainty? How much potential there is in data science for experimentation with subjectivity? Does the realm of abstract data allow possibilities for hybrid identities?"[63]. Thus, on the one hand, it is a question of what happens to the matter of ownership of one's own body when affectivity is constantly and increasingly structurally intertwined with computing devices and techniques, and on the other hand, the extent to which the posthumanist paradigm, liminality and sympoiesis (referring to Donna Haraway's concept[64]) can provide a positive response to the eponymous algorithmic "brute force." However, brute-force search or exhaustive

[61] I borrowed this term from Maciej Ożóg, *Życie w krzemowej klatce…*, op. cit., pp. 164–170.

[62] The website of the project: https://nonbruteforce.net/research-6 (accessed: 5.06.2022).

[63] Ibidem.

[64] D. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*, Duke University Press Books, Durham 2016, pp. 58–59.

search is also a name of straightforward methods of solving a problem that rely on sheer computing power and trying every possibility rather than advanced techniques to improve efficiency.[65] Just in the title of the project, the artist emphasizes that she creates a kind of negotiation with computer algorithms, a posthuman and affective variant of an exhaustive search.

The stimulus for the project was the COVID-19 pandemic, which significantly intensified and partly transformed surveillance through biometric technologies. As Smrekar herself states, the pandemic time has become merely a condensation of training in a behavioural regime, computational self-control, to which we are increasingly subjected by means of computer techniques (primarily learning algorithms), often under the "guise" of technological emancipation.[66] Posing the question of resistance to bio-parameterisation and the place in this context for hybrid identities, the artist analysed three physiological parameters (respiratory processes, body temperature and heartbeat) that have become crucial in the diagnosis of coronavirus infection, but which, as Smrekar analyses, are also regulated by the action of serotonin – a human neurotransmitter whose metabolic functions have been heavily influenced by parallel evolution with dogs. Moreover, a rather simple comparison also became important to the artist: our relationship with dogs has been evolving for 40,000 years, and the human-computer interface has been evolving for 40 years. "The comparison of these two orbits opens a potential for a speculative Dog Computer Interface (DCI), that as an open-ended meta-dialogue between a dog and a machine, might offer us some navigational tools to help us better understand the traps as well as highlights of the HCI paradigm."[67] Smrekar's project is therefore part of a relatively new trend in art&science, but also in modern design, which is referred to as animal-machine design, or Animal-Computer Interaction, as is done by Clara Mancini, creator of the Animal-Computer Interaction Lab at The Open University in the UK and author of a manifesto in which she draws attention to the ethical dimension of designed animal/plants/microbes-machines relationships. On the one hand, these interactions go beyond superficial representation, and on the other, they can lead to the utilitarian exploitation of non-human entities.[68] In Smrekar's installation, however, these relationships go beyond this rather simple, binary schema: they are to become a blueprint for a potential shift in the experience of technology that would be based on the dog's metacommunication skills, far removed from racial, gender and other types of prejudices.

[65] See more: https://www.freecodecamp.org/news/brute-force-algorithms-explained/ (accessed: 7.06.2022).

[66] Ibidem.

[67] The project description is based on the artist's analysis at: https://nonbruteforce.net/research-6 (accessed: 5.06.2022).

[68] C. Mancini, *Animal-Computer Interaction (ACI): A Manifesto*, "Interactions" 2011, vol. 18 (4), pp. 69–73.

To explore these relationships, Smrekar created an orthogonal grid in the shape of a serotonin molecule, which became the specific platform powering the artist's algorithm for her relationship with her dog through electrocardiograph diagnostic wearables that measure their heart rate, respiratory rate and skin temperature. The algorithm was powered on an iterative basis: repeatedly climbing the grid by Smrekar and one of her dogs each time. It is worth adding right away, with regard to Mancini's observations outlined above, that the dogs involved in the project have undergone appropriate testing and months of training to slowly prepare them for climbing activities. The entire installation was designed so that the layout of the grid and the associated behaviour of the artist were conditioned by the changing parameters of her canine companion. She built new combinations of 32 plates and 67 empty spaces as inputs for the neural network, and at the same time as stairs for the dog to follow. The neural network algorithms used in the project were evolving to adapt to the input data, i.e. the parameters obtained from the wearables. The more times the training phase (machine learning) was carried out, the closer to the target were the layouts proposed by the generator that was optimising the results. The aim was to create a system in which the parameters of the dog and the artist, above all the heart rate, were equalised. The system produced was called "Generative Inter-collaborative Network" in which "the machine system that trained itself through the ever-new iterations corresponded to a (human and animal) bodily activity in a constant state of flow: numerous iterations run through the chain nature – human/animal – technology, where each subsequent link emerged from the previous one, gained autonomy, but only to subjugate its antecedent later."[69] The project was accompanied by public observation not only during the performance but above all, through a web application that made it possible to follow in real-time the entire process of operationalising biometric data in the hybrid circulation between dog and human. Following the project, Smrekar concluded that the dog became "the quintessential translator of 'feelings' between technology and humanity" and that the whole process, although based on the creation of reductive digital replicas, took the form of "a new digital body as a potential for a non-human entity."[70]

Smrekar's strategy introduces a different perspective from that proposed by Blas, more clearly indicating the subversive possibilities of using biometric technologies. While Blas's strategy was to stop the identification and machine learning mechanisms, Smrekar radicalises bio-tracking procedures to produce a particular kind of platform for hybrid identity formation, co-experience, affective flow and synchronicity. Giving her project the subtitle "feeding the algorithm," she deliberately created a space of algorithmic "breeding ground" by feeding neural networks with voluntarily measured data. So, on the one hand, one might ask whether Smrekar's project is a move beyond the anthropocentric gesture or rather its reinforcement, whether this

[69] Website of the project: https://nonbruteforce.net/research-6 (accessed: 5.06.2022).

[70] Ibidem.

kind of affective entanglement produces a real hybrid relationship or is rather a naïve affirmation of human/non-human assemblage (in line with Eva Haifa Giraud's criticism of idealist thinking on intertwining[71]). Does the project produce another version of multispeciesism that merely imitates symbiosis? On the other hand, however, Smrekar's project also rightly draws attention to the fact that non-human organisms are just as strongly subject to the computational regime as human ones, a fact that is most often overlooked in the discourse on bio-parameterisation. In this context, giving part of self-agency back to the canine organism represents a rather significant subversivisation of measuring systems. Furthermore, the hybridisation of data, subjected to further operationalisation, through the radicalisation of technodiversity, leads to the transformation of the traditional anthropocentric biometric system – the algorithms of neural networks have to learn a new schema, that of human-animal relationality. In the project this was signalled by the fact that dog data processed within the Apple cloud was read by the system as a disruption to corporate human health data.[72] In so doing, Smrekar has further drawn attention to another dimension of technological exclusion and alienation: one in which there is no room for any form of non-species-normative identities.

The "!brute_force" project, on the other hand, is meant to counterbalance the corporate and control space by using bio-parameterisation technologies, to be a solution against exclusion and oppression, a method "to disperse the concept of machine learning's hierarchical relations and structures of power by applying them to approach introspection, corporeality and affection."[73] Thus, the artist does not want to neutralise the techniques of bio-parameterisation through "tactics of disappearance" (which she considers an unrealistic process), but to reverse their meaning as oppressive and alienating technologies towards the formation of relational, connecting, non-hierarchical systems.

In my considerations, I present two artistic strategies implemented in the field of biometric art, but it is worth adding that another one, exceptionally popular among artists, is the autoethnographic method, in which the reductiveness of technology is transformed into an identity performance based on various variants of storytelling. This strategy is used, among others, in the work of Amy Karle, Marco Donnarumma, and Laurie Frick,[74] as well as Polish artist Viola Kuś and Finnish artist and researcher Marija Griniuk. For each of the artists who create bio-parametric performances, biometrics becomes a cognitive and introspective tool that does not reduce their identity but, on the contrary, brings out additional autobiographical contexts and makes it possible to create an interconnective, relational situation that goes beyond

71 E.H. Giraud, *What Comes after Entanglement…*, op. cit.

72 Website of the project: https://nonbruteforce.net/research-6 (accessed: 5.06.2022).

73 Ibidem.

74 I analyzed these projects in my book: *Sztuka biometryczna w perspektywie filozofii post- i transhumanizmu…*, op. cit.

the perspective of the individual as a closed, hermetic organism.[75] As Griniuk herself states when discussing her projects ("The Tests: Techno-Voyeurism into a Performing Body," "Mark Making"[76]), which are based on the EEG apparatus, the use of biometric tools makes it possible to create an environment of "inhuman interconnections, transcorporeality, and liminal space" together with the audience.[77] In this environment, the human body remains in a network of potential and real relationships with technologies, the audience, and the surroundings. According to Stacy Alaimo's observations: "Transcorporeality means that all creatures, as embodied beings, are intermeshed with the dynamic, material world, which crosses through them, transforms them, and is transformed by them."[78] In her projects, Griniuk makes available the data on her brain activity through the use of a computer programme that translates raw data into graphic representations that change depending on how the audience reacts (e.g. when someone from the audience hugs the artist, makes a loud sound, etc). The goal of the project is to "[…] invite the audience members to co-perform in real-time; they can influence the unfolding performative action and see these outcomes, as the performing body reacts to the audience's triggers and the triggers of the objects surrounding the performer."[79] This goal can thus be described as a biometric transformation of Marina Abramovich's famous performances (partly performed with Ulay) "Artist Is Present." The very situation of the performance becomes important as well, which, on the one hand, creates a communicative space with the audience, but also conditions the circulation of recorded data in an ongoing manner, taking into account the randomness of interactions, the unpredictable affective reactions of the organism.

The situation created in this way is obviously abstracted from the real method of operationalising data; it creates a clearly affirmative scenario in which, referring to Luciana Parisi's considerations cited above, it can be said that an open system of potentiality, unpredictability and uncertainty does not form the basis for machine learning and multimodal systems for processing biological data and does not become a breeding ground for affective computing, because these data are not used outside the artistic situation itself, they are not subject to further processing. For artists, this kind of autoethnography therefore has an emancipatory potential (for example in relation to the anthropocentric belief in a closed, superior identity), but this subversivisation is strictly dependent on the context of the artistic presentation. However, regardless of the somewhat idealistic, utopian vision of biometric technologies,

[75] On the illusory nature of a hermetic, closed subject, see more, e.g.: S. Day, C. Lury, *Biosensing: Tracking Persons* [in:] D. Nafus (ed.), *Quantified: Biosensing Technologies in Everyday Life*, MIT Press, Cambridge–London 2016, pp. 47–48.

[76] See the projects' websites: https://marija.griniuk.nu/gallery.html (accessed: 15.06.2022).

[77] M. Griniuk, *Performance Art Using Biometric Data*, "Art History & Criticism" 2021, vol. 17 (1), p. 101.

[78] S. Alaimo, *Transcorporeality* [in:] R. Braidotti, M. Hlavajova (eds.), *Posthuman Glossary*, Bloomsbury Publishing, London 2018.

[79] M. Griniuk, *Performance Art…*, op. cit., p. 107.

autoethnographic projects in fact design alternative environments of bio-parameterisation, becoming a tool of self-discovery and non-human relationality for the creators.

Conclusion

According to Gabbrielle M. Johnson, there are important similarities between algorithmic and cognitive biases that indicate that the sources of these biases emerge from the seemingly neutral information processing patterns themselves. This means that, in many cases, programmers do not necessarily include biases against social minorities in the code they create.[80] This issue is also addressed by Cathy O'Neil in relation to discriminatory errors in Google's automatic phototagging service.[81] According to Johnson: "it appears the biases in some sense implicitly emerge from the algorithms' operating on the data, mimicking the biases reflected in the data themselves. […] An AI […], which uses machine learning to capitalize on (or 'learn' from) statistical regularities in human-generated datasets, tends to pick up social patterns that manifest in human behavior and that are reflected in the data on which it is trained."[82] This means that algorithmic biases, simplifications and normativisations undermine the still fundamental assumption that computer-based decision-making is more objective and accurate than human decision-making, because in fact the two domains are very strongly intertwined, and algorithmic biases operate on very similar principles to human cognitive biases. Moreover, the author also challenges another belief: that the operation of algorithmic ostracism and exclusion is not based in any way on the social and political conditions to which people are subject.[83]

In this respect, Johnson remains in line with Luciana Parisi and Marie-Luise Angerer, whose concept of technosensation (and its extension) formed the basis for my considerations. From the reflections on the philosophy of technology I have presented, it is clear that algorithmic biases do not result solely from objective, mechanical automatic decision-making processes, nor does this in any way imply that technology offers neutral, transparent tools, for example in the field of bodily parameterisation, and that one can directly equate the operation of computers and the mind (this rather old metaphor has, after all, been rightly questioned many times before). As the authors point out, it is rather a related mechanism that is based on similarities in the formation of information processing in computer systems and affective-cognitive mechanisms. This connection is also the reason why algorithmic biases are so effective. However,

[80] G.M. Johnson, *Algorithmic Bias: On the Implicit Biases of Social Technology*, "Synthese" 2021, vol. 198 (1).

[81] C. O'Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*, Crown Publishing Group, New York 2016.

[82] G.M. Johnson, *Algorithmic Bias…*, op. cit., p. 2.

[83] Ibidem.

understanding the links between these mechanisms, according to Johnson, allows us to more effectively counteract systems of technological bias. The author conducts a complex analysis of these convergences, considering the "so-called black box algorithms" and "The Proxy Problem," at the same time pointing out that: "Inquiries regarding the nature of bias and the utility of comparing its existence in both machine and cognitive domains are still in their infancy."[84] Other still important conclusions to emerge from this analysis, beyond those I have outlined, concern the question of the utility of traditional methods of ethical and epistemological analysis, and the question of whether, given this, it is at all possible to completely eliminate bias in a person or programme that directly benefits from the exchange between these two domains. Johnson does not give an answer to this question, but makes it clear that: "[…] there are no purely algorithmic solutions to the problems that face algorithmic bias."[85] So perhaps some model for solving this problem rests on a fundamental reprogramming of the sympoietic relationship between technology and the organic milieu.

In my considerations, I tried to show how artists diagnose, illustrate and co-create, on the basis of critical making,[86] the processes of technological prejudice, exclusion, but also potential emancipatory activities. In this context, I have deliberately juxtaposed the works of two artists, who develop different strategies toward technological processes, but I have also set them in relation to other projects that address this issue in order to point to its relevant contexts. However, it seems that the closest to the analyses in the field of philosophy of technology that I have presented is Maja Smrekar's project, based on an alternative system of technological ontology and functionality, which treats the process of "feeding" algorithms with technodiversity (deliberately radicalised in the project) as a basis for the formation of a post-anthropocentric model of technological-organic relationality. It is the non-human agency that becomes in the project that to some extent jams the machinery of algorithmic and cognitive biases, with full awareness of the reductive nature of bio-parameterisation technology.

Instead, each of the projects presented proves that the functionality of computational technologies is not bipolar, but it is developing as a spectrum of nuanced mechanisms, both in the area of oppressive-exclusionary systems and emancipatory strategies.

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84 Ibidem, p. 21.

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86 See more: M. Ratto, *Critical Making: Conceptual and Material Studies in Technology and Social Life*, "The Information Society" 2011, vol. 27 (4), pp. 252–260.

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