FOR NOW WE SEE THROUGH AN AI DARKLY; BUT THEN FACE-TO-FACE: A BRIEF SURVEY OF EMOTION RECOGNITION IN BIOMETRIC ART

Abstract: Our knowledge about the facial expression of emotion may well be entering an age of scientific revolution. Conceptual models for facial behavior and emotion phenomena appear to be undergoing a paradigm shift brought on at least in part by advances made in facial recognition technology and automated facial expression analysis. And the use of technological labor by corporate, government, and institutional agents for extracting data capital from both the static morphology of the face and dynamic movement of the emotions is accelerating. Through a brief survey, the author seeks to introduce what he terms biometric art, a form of new media art on the cutting-edge between this advanced science and technology about the human face. In the last ten years, an increasing number of media artists in countries across the globe have been creating such biometric artworks. And today, awards, exhibitions, and festivals are starting to be dedicated to this new art form. The author explores the making of this biometric art as a critical practice in which artists investigate the roles played by science and technology in society, experimenting, for example, with Basic Emotions Theory, emotion artificial intelligence, and the Facial Action Coding System. Taking a comprehensive view of art, science, and technology, the author surveys the history of design for biometric art that uses facial recognition and emotion recognition, the individuals who create such art and the institutions that support it, as well as how this biometric art is made and what it is about. By so doing, the author contributes to the history, practice, and theory for the facial expression of emotion, sketching an interdisciplinary area of inquiry for further and future research, with relevance to academicians and creatives alike who question how we think about what we feel.

Keywords: affective computing, artificial intelligence, Basic Emotion Theory, emotion recognition, Facial Action Coding System, facial expression of emotion, facial recognition, biometrics, media art, physiognomy

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Introduction

Our knowledge about the facial expression of emotion may well be entering an age of scientific revolution. Conceptual models for facial behavior and emotion phenomena have accrued enough explanatory anomalies as to drift into crisis. And face studies appear to be undergoing a paradigm shift. This is brought on at least in part by advances made in facial recognition technology and automated facial expression analysis. Since the 1960s and 1970s, the algorithmic, computational, and digital turns have inspired a Fourth Industrial Revolution or Second Machine Age. The cybernetic, post-digital, and transhuman have come to blur the boundaries between atom and bit, flesh and digital, human and machine. And many of the sensory and cognitive tasks that were previously the exclusive domain of the biological world are now being automated, including facial perception itself. This use of techno-labor for extracting data capital from both the static morphology of the face and dynamic movement of the emotions is accelerating in an increasingly globalized society with its big data surveillance and social media spectacle. As a consequence, stakeholders have a vested interest in face studies not only as pure research but also as applied research that addresses real-world problems. And data on the face has become a commodity or currency with a market value like never before. In response to this clear and present social need, technology companies economically compete to innovate approaches for teaching machines to see the face like a human through artificial intelligence, computer vision, and machine learning. And more and more corporate, government, and institutional agents now are employing facial recognition for the classification, computation, and even control of people on the basis of face. However, there is much uncertainty in the underlying science behind such data behaviorism. And due to an absence of laws and regulations, the use of recognition technology poses complex ethical dilemmas regarding algorithmic transparency, fairness, and accountability, as well as data privacy as a human right.

On the cutting-edge between this advanced science and technology about the face is what I term biometric art. In the last ten years, an increasing number of media artists in countries across the globe have been creating such biometric artworks. And today, awards, exhibitions, and festivals are starting to be dedicated to this new art form. Biometric art as an art form in and of itself is even beginning to be acknowledged in the canons and timelines of art history and visual culture, through anthology, journal, and conference papers, monograph

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2 E. Twardoch, Are There Stories Hidden Behind Hormonal Spaces and X-Ray Photographs? Around Narratives in Biometrics-based New Media Art, in: The Practice of Narrative: Storytelling in a Global Context, eds. A. Penjak, M. Heitkemper-Yates, Brill, Leiden 2016, pp. 113–122, DOI: 10.1163/9781848883802_012; P. de Vries, W. Schinkel, Algorithmic Anxiety: Masks and Camouflage in Artistic Imaginaries of Facial Recognition Algorithms, “Big Data & Society” 2019, Vol. 6, No. 1, pp. 1–12, DOI: 10.1177/2053951719851532.
chapters, and exhibition catalogues, beyond the relevant literature from the field of media art. Given the facial ethos of the early twenty-first century, with its Orwellian phantasms and panoptical overwatch, biometric art critically reflects upon the way recognition technology works and how it is used in society.

Through a brief survey, I seek to introduce this art form which is based upon the contemporary science and technology about the facial expression of emotion. I explore the making of this biometric art as a critical practice in which artists investigate the roles played by science and technology in society (1), experimenting, for example, with Basic Emotions Theory (2), emotion artificial intelligence (3), and the Facial Action Coding System (4). Taking a comprehensive view of art, science, and technology, I survey the history of design for biometric art that uses facial recognition and emotion recognition, the individuals who create such art and the institutions that support it, as well as how this biometric art is made and what it is about. By so doing, I contribute to the history, practice, and theory for the facial expression of emotion, sketching an interdisciplinary area of inquiry for further and future research, with relevance to academicians and creatives alike who question how we think about what we feel.

1. A Critical Practice between Art, Science, and Technology

In the last decade, automated facial expression analysis has more and more been used to discriminate whether or not, to what extent, and under what conditions, emotion is being experienced. This subtype of facial recognition that uses artificial intelligence is called emotion recognition. It has also been defined as “Emotion AI” by computer scientist Rana el Kaliouby, the Chief Executive Officer of Affectiva, a recognition technology company that grew out of The Massachusetts Institute of Technology (MIT) Media Lab in the late 2000s. Broadly speaking, emotion recognition falls un-

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3 M. Ożóg, Życie w krzemowej klatce. Sztuka nowych mediów jako krytyczna analiza praktyk cyfrowego nadzoru (Life in a Silicon Cage: New Media Art as a Critical Analysis of Digital Surveillance Practices), Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2018, pp. 164–170; Faceless: Re-Inventing Privacy Through Subversive Media Strategies, eds. B. Doringer, B. Felderer, Edition Angewandte, De Gruyter Mouton, University of Applied Arts, Berlin–Vienna 2018; L. Lee-Morrison, Portraits of Automated Facial Recognition: On Machinic Ways of Seeing the Face (Image), Transcript Verlag, Bielefeld 2019, pp. 141–175; K. Fedorova, Tactics of Interfacing: Encoding Affect in Art and Technology, The MIT Press, Cambridge, MA 2020, pp. 23–71.

4 Facial Recognition Exhibition Catalogue, ed. D. Stein, The Wende Museum, Culver City, CA 2016, https://wendemuseum.files.wordpress.com/2016/05/facial-recognition-catalog.pdf (accessed: 11.12.2019); Das Gesicht: Bilder, Medien, Formate (The Face: A Search for Clues), ed. S. Weigel, Wallstein Verlag, Göttingen 2017; S. Wirth, Faszination Gesicht: Was unsere Mimik alles zeigt (Fascination Face: What Our Expressions Show), “Vögelekultur Bulletin” 2019, No. 107, Vögele Culture Center, Pfäffikon, Switzerland.

5 R. El Kaliouby, C. Colman, Girl Decoded: A Scientist’s Quest to Reclaim Our Humanity by Bringing Emotional Intelligence to Technology, Penguin Books, New York 2020.
under the category of affective computing. This field was first defined in 1995 by computer scientist and electrical engineer Rosalind Picard, who founded the Affective Computing Research Group at MIT, and later co-founded Affectiva with Kaliouby. To Picard, affective computing is “computing that relates to, arises from, or influences the emotions.” It has the “aim not just to build machines that have emotional intelligence, but to build tools that help people boost their own abilities at managing emotions, both in themselves and in others.” And the actual and potential applications for emotion recognition are indeed considerable. Around 2007, just some forty years the first public exhibition of an automated facial recognition system at the 1970 World Exposition in Japan, facial recognition as well as emotion recognition began to be released for public consumption in the form of commercial products, either open source or black box, such as an Application Programming Interface (API) or Software Development Kit (SDK). And this is when media art enters, and where biometric art that is based on emotion recognition begins.

On the face of it, there is great diversity between works of biometric art based on facial recognition technologies. At first sight, this art may even share forms with other media arts as well as many traditional arts. And a given biometric artwork may combine all manner of materials, such as facial recognition using artificial intelligence, face image databases, computer servers, digital cameras, screens or some other displays, and beyond. But in many if not most biometric artworks, the audience to one degree or another experiences their own face while it is being recognized. And the primary artifact, image, or object that constitutes the work itself principally consists of the matching from data to individual, as the face of the person interacting

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6 R.W. Picard, *Affective Computing, Tech. Report: 321*, The MIT Press: MIT Media Lab, Cambridge, MA 1995.
7 Affectiva, *Affectiva*, n.d., https://www.affectiva.com/ (accessed: 11.12.2019).
8 R.W. Picard, *Affective Computing*, The MIT Press, Cambridge, MA 1997, p. 99.
9 *Eadem*, *Toward Machines with Emotional Intelligence*, in: *Proceedings of the First International Conference on Informatics in Control, Automation and Robotics*, ICINCO 2004, Setúbal, Portugal, August 25–28, 2004, p. 19, DOI: 10.1093/acprof:oso/9780195181890.003.0016.
10 Today, real-world applications for facial recognition and emotion recognition include, for example: augmented or virtual reality, consumer marketing, film and game animation, healthcare systems, lie detection, human-computer interaction, law enforcement, military perception, smart devices and environments, social robotics, and beyond.
11 D. Schiller, *On the Basis of Face: Biometric Art as Critical Practice, its History and Politics*, Institute of Network Cultures, Amsterdam 2020.
12 Biometric art based on facial recognition can intersect and overlap with a multitude of other art forms in media art, including, for example: algorithm or computer art; augmented, mixed, or virtual reality art; bioart (art which uses life processes and living organisms); brain-computer interface art; digital fashion design; game design; interactive and/or immersive installation art; internet or net art; performance or happenings; and robotics-based art.
13 Biometric art can also share formal elements with traditional art forms, including, for example: applied arts such as architecture, ceramics, or fashion design; fine arts such as drawing, painting, film, photography, or sculpture; and performance arts such as dance or theatre.
with the work is compared to the faces of those people archived in a database. That is, as media art theorist Ksenia Fedorova analyzes, the audience and their face act upon the artwork, which itself affords for this interaction, enabling a multipath informational exchange between artwork and audience, whereby the artifact, image, or object changes somehow in response to this interactor or participant. Because of the way facial recognition works, this basic design is relatively consistent across biometric art. And, to analogize from biology to culture in the poetics of nineteenth century naturalist Charles Darwin, “it is from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.”

Essentially, a biometric artwork is an intelligent machine. As computer scientist and pioneering computer artist Frieder Nake argues, such an art form consists triadically of a subface, interface, and surface. The subface is the program or software that runs on a computer, in this case the facial recognition using artificial intelligence, as well as the machine or hardware that executes a code. The interface is the shared boundary across which the separate components of this system exchange inputs. And the surface is the output device that generates an image or other effects from this code. In a biometric artwork, therefore, facial recognition technology is but one material out of many that has been intermedially combined by the artist, multi-artist collaboration, or interdisciplinary group. As philologist Irina O. Rajewsky examines, with intermedial combination, each form of articulation plays a role in determining the media specificity for the newly-formed object and, in turn, contributes to its signification. Thus, hybridized into the biometric artwork may be analogue as well as digital media, not only sensory but also computable information, human participants and machine provocateur, all within a complimentary generative process of becoming.

14 K. Fedorova, Tactics of Interfacing..., op. cit., pp. 23–71.
15 C. Darwin, On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life, John Murray, London 1859, p. 490.
16 F. Nake, Surface, Interface, Subface: Three Cases of Interaction and One Concept, in: Paradoxes of Interactivity: Perspectives for Media Theory; Human-Computer Interaction, and Artistic Investigations, eds. U. Seifert, J. Hyun Kim, A. Moore, Transcript, Bielefeld 2008, pp. 105–107, DOI: 10.25969/mediarep/2719.
17 I.O. Rajewsky, Intermediality, Intertextuality, and Remediation: A Literary Perspective on Intermediality, “Intermédialités” 2005, No. 6, pp. 51–53, DOI: 10.7202/1005505ar.
Figs. 1 and 2: Julius von Bismarck, Benjamin Maus, and Richard Wilhelmer, *Public Face*, 2007. Installation view from 2018, Kibbelsteg Bridge over the Elbe River, Hamburg, Germany. Photographs © Carsten Dammann. Used with permission.
For example, one of the earliest biometric artworks, researched and developed in 2007, was German media artist Julius von Bismarck, German digital designer Benjamin Maus, and Austrian filmmaker Richard Wilhelmer’s *Fühlometer* (*Feel-O-Meter*), later re-titled *Public Face* (Figs. 1 and 2). To create this biometric artwork, the artists intermedially combined both contemporary and conventional technologies within a pluri-medial constellation. They used a subface of recognition technology on computer servers; an interface of digital cameras with telephoto lenses; and a surface of fluorescent neon tubes and steel buttressing sculpture in the shape of colossal smiley that weighs one-and-a-half tons and has an eight-meter circumference. During a group interview with the press, Wilhelmer states that they “wanted to playfully represent” the ways in which facial recognition technology can be “applied for control above all” in machines “that use established standards to assess how we behave and which facial expression suggests which behavior.” According to the group’s artist statement, “[d]ue to its immense scale, the sculpture becomes part of the skyline, and its varying expressions can be seen from far away,” while *Public Face* makes “the changing, average emotions of city inhabitants visible to everyone in public space.”

In the subface for *Public Face*, media artists Bismarck, Maus, and Wilhelmer used the Sophisticated High-speed Object Recognition Engine (SHORE) Framework from the Fraunhofer Institute for Integrated Circuits (IIS) in Erlangen, Germany. As computer scientists Tobias Ruf, Andres Ernst, and Christian Küblbeck specify in a technical paper, SHORE supports facial detection in both still images and moving videos based on the extraction of sixty-eight facial landmarks as well as real-time classification for age, gender, and the facial expression of emotion. And indeed,
SHORE was particularly suited to Bismarck, Maus, and Wilhelmer’s artistic project for two reasons. Firstly, SHORE achieves robust face detection as far down as an 8x8 pixel minimum. Therefore, Public Face could include within its processes for recognition those face images of numerous passersby taken by camera at a considerable distance. And secondly, as explained by Jens Garbas, former head of the Image Analysis and Pattern Recognition department at Fraunhofer IIS that developed this recognition technology, SHORE neither stores nor transmits data, but rather produces only anonymous metainformation; it is “privacy by design.”

Therefore, Public Face could not include these passersby as individuals per se within its processes for recognition. Because SHORE had been trained for both face marker annotations as well as emotion class attributes, and its performance benchmarked or evaluated on several face image databases, its face model could “then be applied to detect similar objects in yet unseen images.” A “user or client […] only needs to know how to configure it and integrate it into a larger scale application,” such as artists into an artwork.

At the interface for Public Face, Bismarck, Maus, and Wilhelmer mounted digital single-lens reflex cameras (DLSR) with 200–500mm f/2.8 APO EX DG Ultra-Telephoto zoom lenses produced by the Sigma Corporation of America. When the artwork is active, digital images of passersby from these cameras are input for data processing. The way SHORE works is by detecting faces in digital images of faces within their environment, extracting census features away from and out of these image data, and classifying these faces “at pixel level” by matching them to face models, also termed prototypes or templates, “specifying how positive or negative its expression is.” Output in Extensible Markup Language (an XML file), this real-time aggregate metadata then prompts a sequence of actions for the sculptural installation.
And on the surface of Public Face, the face of the artwork changes to reflect the emotions of the viewers, at least insofar as this majority is reported by SHORE, the facial recognition using artificial intelligence in the biometric artwork. With the smiley made from neon and steel, the semi-circular curve of the mouth as well as the separate half-circle upper and lower eyelids rotate on the horizontal axis in order to produce those facial expressions that are commonly associated with anger >_<, happiness :, and surprise 0_0. For the viewer, the aesthetic experience with Bismarck, Maus, and Wilhelmer’s Public Face, like with Javier Hernandez and Mohammed Ehsan Hoque’s (US) Mood Meter (2011), created four years later in 2011 at the MIT Media Lab also using Fraunhofer’s SHORE, requires an understanding of the sculpture as an icon in relation to other smileys. The history of such design spans from anthropomorphic pictograms and typographic art, to the yellow smiley designed by graphic artist Harvey Ball in 1963 for State Mutual Life Assurance, and ASCII :-) character sequence first proposed by computer scientist Scott Fahlman in 1982 on a Carnegie Mellon University online bulletin board. As Wilhelmer states, “people see the smiley face and find it funny.” Then they learn that Public Face “can read emotions, and that’s funny as well. But in this instance, the laughter gets stuck in your throat because you think: what if this software falls into the wrong hands?”

There is, therefore, more to a work of biometric art that uses emotion recognition than meets the eye. And this art form should not be taken at face value. In contrast to “traditional images” which are the “observation of objects,” as media philosopher Vilém Flusser articulates, these “technical images” are the “computation of concepts.” And the understanding of such an image, according to media theorist Mark B.N. Hansen, “can no longer be restricted to the level of surface appearance, but must be extended to encompass the entire process by which information is made...
perceivable”.

But perhaps the biggest difference that makes a difference in the way biometric art works is its classifier. A classifier is a predictive model which is used to map from input variables to output variables. However, today in biometric art, as in recognition technology, there is great diversity in such categories, labels, or targets, as the classifier is variously termed in the computer sciences. Such classifiers are what the faces of the viewer, participant, or interactor are compared to and matched with as the biometric artwork performs facial recognition.

Given today’s ever-expanding application of automated facial expression analysis in affective computing and emotionAI, an ever-increasing number of media artists use not only facial recognition but also emotion recognition in their biometric artworks. The classifier, in these cases, is not gender or race, celebrity or criminality, but some concept or other of what emotions are and what they do. That is, the classification of emotion on the basis of face by facial recognition using artificial intelligence foremost depends upon the concept of what emotion is in the first place. After all, at this moment in the technological evolution of the human species, a machine cannot learn to see faces and emotions like a human (simulation), a human cannot see more with a machine (prosthetic), and a machine and a human can see differently together (augmentation), unless a human first teaches a machine what the facial expression of emotion is. These terms must be defined for the artificial intelligence. And thus, the facial behavior and emotion phenomena may be approached differently in different artworks, largely dependent on the concepts underlying the facial recognition technology.

2. Basic Emotions Theory (BET)

Teaching machines to see the face like a human requires interdisciplinary exchange between the computer sciences which make recognition technology and the brain and behavioral sciences which theorize about facial expression of emotion. But there is much debate, across disciplines such as cognitive science, psychology, and neuroscience over what emotions are and what they do. However, from all theories for the facial expression of emotion, such as the Behavioral Ecology View proposed by social psychologist and human ethologist Alan J. Fridlund, or the Constructed Emotion Theory proposed by neuropsychologist Lisa Feldman Barrett, Basic Emotions...
Theory has proven by far the most significant to recognition technology as well as biometric art.

Advocates for Basic Emotions Theory (BET), sometimes also called the Basic Emotions View or Theory of Universality, notably include psychologists Silvan S. Tomkins, as well as Carroll E. Izard and Paul Ekman, who were both mentored by Tomkins in the 1960s around the same time that facial recognition began. The primary claim in Basic Emotions Theory is threefold: Firstly, the facial expression of emotion is prototypical, specified by biology. Second, it is more or less universal across cultures. And thirdly, there is a causal link between an outside physiological behavior of the facial expression and the inside psychological phenomena of an emotion that emanates it. Variability to innate expression, therefore, is largely determined by learned expression through social scripts and display rules; that is, by the over-coding from culture onto biology. Neurobiologically speaking, so-called basic emotions like anger, contempt, disgust, fear, happiness, sadness, or surprise are defined and described as phylogenetically stable and functionally discrete neural circuits that activate with the appraisal of stimuli and trigger patterns of response, such as the anatomical mechanics and movements that produce facial expression.40

The advocates for Basic Emotions Theory most frequently cite nineteenth century naturalist Charles Darwin as its intellectual father and his The Expression of Emotion in Man and Animals in 1872 as its foundational text.41 In The Expression, Darwin hypothesized that the facial expression of emotion “once existed in a much lower and animal-like condition” and “every true or inherited movement of expression seems to have had some natural and independent origin.”42 His claim, however, was not that facial morphology evolved in order to express or display emotion. Actually, Darwin proposed that facial behavior is more akin to a rudimentary or vestigial feature like the appendix, body hair, tail bone, or wisdom teeth. It is “of no service, often of much disservice” and “purposeless.”43 To Darwin, the facial expression of emotion is a remnant of reflexes that had once been useful, arising from the antithesis of contrasting elicitors, the direct action of the nervous system in the overflow of excitation. As such, he wrote that it was “highly important to ascertain whether the same expressions and gestures prevail, as has often been asserted without much evidence, with all of the races of mankind”; that is, whether and to what extent the facial expression of emotion is universal.44

40 W.E. Rinn, The Neuropsychology of Facial Expression: A Review of the Neurological and Psychological Mechanisms for Producing Facial Expressions, “Psychological Bulletin” 1984, No. 95, pp. 52–77, DOI: 10.1037/0033-2909.95.1.52.
41 P. Ekman, Darwin’s Contributions to Our Understanding of Emotional Expressions, “Philosophical Transactions of the Royal Society B” 2009, No. 364, pp. 3449–3451, DOI: 10.1098/rstb.2009.0189.
42 C. Darwin, The Expression of the Emotions in Man and Animals, John Murray, London 1872, pp. 12, 356.
43 Ibidem, pp. 67, 76.
44 Ibidem, p. 15.
In the history of face studies from classical physiognomy to current biometrics, Darwin made the first systematic endeavor to link the facial signals of animals to the facial expressions of humans. And some one-hundred-and-fifty years after *The Expression of Emotion* hit the shelves in 1872, media artists play with Darwin’s dangerous idea in their biometric artworks: that the purpose for life might not need a de-
signer and that natural selection, albeit a blind mechanism, is nevertheless sufficient to justify the processes of evolution. For example, in 2013 with *Cat or Human* (Figs. 3 and 4), South Korean engineer Shin Seung-Back and artist Kim Yong-Hun, who as an artist duo go by the name Shinseungback Kimyonghun, used facial recognition designed for cats (*Felis silvestris catus*) on humans and facial recognition designed for humans (*Homo sapiens sapiens*) on cats. Of course, there are similarities between the facial morphologies of humans, other primates, and non-primat mammals due to shared phylogenetic heritage. And scientific methods, practices, and tools currently exist for the comprehensive description of the facial expression of emotion in the orangutan, macaque, gibbon, and chimpanzee, as well as horse, dog, and cat. But by applying recognition technologies interspecifically or between species, Seung-Back and Yong-Hun critically reflect, as Darwin did, upon the most fundamental characteristics of the face and its perception.

To create this biometric artwork, Shin Seung-Back and Kim Yong-Hun web-scrapped digital images from the online image hosting service Flickr. The images that they chose were posted under the Creative Commons Attribution 2.0 Generic (CC BY 2.0) and so were free for them to share or adapt. Having collected the images, the artists then organized two data sets: one for images showing cat faces and one for images showing human faces. And then, so that *Cat or Human* recognized people who look more like cats and cats who look more like people, Seung-Back and Yong-Hun used facial recognition technology designed for one species on the other species and vice versa, OpenCV Face Recognizer for cat face images, and Kittydar for human face images. Kittydar was developed by computer scientist Heather Arthur, based on research by computer scientists Weiwei Zhang, Jian Sun, and Xiaou Tang, and disseminated open source on GitHub under an MIT License. Trained on thousands upon thousands of images that showed cats as well as non-cats, the way Kittydar works is...

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45 S. Seung-Back, K. Yong-Hun, *Cat or Human*, 2013, http://ssbkyh.com/works/cat_human/ (accessed: 11.12.2019).
46 A. Wilkins, *Making Faces: The Evolutionary Origins of the Human Face*, Harvard University Press, Cambridge, MA 2017, pp. 123–171.
47 Animal FACS, *Animal Facial Action Coding Systems (FACS)*, Psychology Department, University of Portsmouth, http://animalfacs.com/index.html (accessed: 11.12.2019).
48 C. Caeiro, A. Burrows, B.M. Waller, *Development and Application of CatFACS: Are Human Cat Adopters Influenced by Cat Facial Expressions?*, “Applied Animal Behaviour Science” 2017, No. 189, pp. 66–78, DOI: 10.1016/j.aplanim.2017.01.005.
49 P. Wagner, *Face Recognition with OpenCV2*, Open Source Computer Vision (OpenCV), 2012 https://docs.opencv.org/3.3.1/d9/d94/tutorial_face_main.html (accessed: 11.12.2019).
50 H. Arthur, *Kittydar: Face Detection for Cats in JavaScript*, GitHub, 2012, http://harthur.github.io/kittydar/ (accessed: 11.12.2019).
51 Ibidem.
52 W. Zhang, J. Sun, X. Tang, *Cat Head Detection: How to Effectively Exploit Shape and Texture Features*, in: *Computer Vision – ECCV 2008: 10th European Conference on Computer Vision, Marseille, France, October 12–18, 2008, Proceedings, Part IV*, eds. D. Forsyth, P. Torr, A. Zisserman, Springer Verlag, Berlin–Heidelberg 2008, pp. 802–816, DOI: 10.1007/978-3-540-88693-8-59.
by dividing a digital image into a series of windows, and then testing each window in order to detect for the absence or presence of a cat face. For each of these localized image segments, Kittydar extracts tractable image data, or data that is more easily shaped or worked, away from and out of the total image data. Kittydar achieves this by counting the occurrences of gradient orientation in each image window, recognizing edge change from light to dark and from dark to light, its direction, and strength; that is, using Histogram of Orient Gradients (HOG) and the HOG-descriptor library. A vector of these numbers, with both direction and magnitude, is then fed into a neural network, which classifies the likelihood that this data represents a cat on a scale from 0 to 1.

With facial perception in the human visual system, the attributes of the face and its features such as color, contrast, edge, form, light, luminosity, shape, and beyond, all play a part in our ability to detect the face as well as distinguish it from other objects in the environment.53 In Cat or Human, as Seung-Back and Yong-Hun observe, “computer vision can take many different strategies to detect a human face or a cat face,” considering “skin texture, shape, mathematical features, etc.”54 The “[c]omputer often mistakes one for another,” a cat for a human and a human for a cat, “and the similarities are visible to human eyes, too.” This is no “mere error resulted by the immaturity of the technology” but a key feature of facial recognition. And with Cat or Human, Seung-Back and Yong-Hun explore the ways in which a machine can see like the human, “the error can raise the question of how computer vision works,” and “help us understand the mechanisms of human vision.” With Cat or Human, however, Seung-Back and Yong-Hun reflect upon the differences that separate the facial expression of emotion in human and nonhuman animals, and how these differences are one of degree and not of kind, in a critique of anthropocentrism and essentialism. Post-Darwin, however, the central mission in face studies has gradually and incrementally turned from the perception of static facial morphology to the interpretation of dynamic facial movement. In other words, since the mid-twentieth century, research about the face has endeavored to establish links between facial behavior and emotion phenomenon.

3. Emotion Artificial Intelligence (EmotionAI)

This is not to say that all of the concepts today about what emotions are and what they do are homogenous. Not at all. Concepts vary between researchers as well as across an individual researcher’s body of work. And there is much debate in the

53 For example, see: Oxford Handbook of Face Perception, eds. A.J. Calder, G. Rhodes, M.H. Johnson, J.V. Haxby, Oxford University Press, Oxford–New York 2011; D. Schiller, Greening Face: How Color Makes Facial Expression Sensible, from Pre-Christian Architectural Spaces to Post-Digital Smart Environments, “Arts & Cultural Studies Review” 2018, Vol. 4, No. 38, pp. 493–534, DOI: 10.4467/20843360PK.18.026.10364.
54 M. Sick-Leitner, Featured Artists 2014 Ars Electronica, Ars Electronica Blog, 18.09.2014, https://ars.electronica.art/aeblog/en/2014/08/18/featured-artists-ars-electronic-2014/ (accessed: 11.12.2019).
scientific community over the merits and limitations of Basic Emotions Theory, particularly coming out of the neurosciences. For instance, as historian of science Ruth Leys traces, criticisms include how Basic Emotions Theory fails to take into account the role played by context and culture in the facial expression of emotion, the degree to which such facial expression is part of social intent, and how it serves to guide actions not only reactively but predictively as well. To a greater and greater extent, today facial expression is considered to be affected by culturally specific and socially variable conventions, to reflect blended rather than discrete emotions, and to be not only aroused by emotion but also activated by it. Indeed, the paradigm keeps on turning and Basic Emotions Theory may not be where the science will be tomorrow.

Some media artists critically reflect upon the role played by context in the communications of face and emotion. For example, in 2016 with Neutralité: Can’t and Won’t, Chinese-born, Canada-based fashion designer Ying Gao fabricated dresses that use facial recognition as well as emotion recognition (Figs. 5 and 6). In her own words, according to her artist statement, “design is the medium” for Gao. And she describes her body of work as an exploration into “the status of the individual” who today is being transformed through “external interferences,” testifying “to the profound mutation of the world in which we live,” in a critical reflection “that transcends technological experimentation.” Recognition technologies such as eye tracking and facial recognition, therefore, “allow garments to become more poetic and interactive.” The dresses for Neutralité were made from cotton mesh; polyvinylidene difluoride (PVDF), a low-density and non-reactive plastic; and super organza, a polyester fabric with a density of only seven deniers, as in ultra-sheer leggings, stockings, or tights, one-fifth the thickness of a human hair, and weighing only ten grams per square meter. But the dresses were also made from what Gao calls “electronic devices.” This includes facial recognition technology, with all its necessary algorithms, cameras, computers, and databases, in an artificial intelligence which is situated locally in the dress itself as well as remotely elsewhere in the room.

Exactly the way recognition technology works in Neutralité: Can’t and Won’t, and how Ying Gao uses it, is not possible to say. This is because Gao “does not answer questions regarding technical details” (Ying Gao Studio, email communication with

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55 For example, see: A. Celeghin, M. Diano, A. Bagnis, M. Viola, M. Tamietto, Basic Emotions in Human Neuroscience: Neuroimaging and Beyond, “Frontiers in Psychology” 2017, Vol. 8, No. 1432, pp. 1–29, DOI: 10.3389/fpsyg.2017.01432.
56 Y. Gao, Neutralité: Can’t and Won’t, 2016, http://www.yinggao.ca/interactifs/neutralite-cant-and-wont/ (accessed: 11.12.2019).
57 Eadem, Profile, http://yinggao.ca/info/profile/ (accessed: 11.12.2019).
58 C. Jones, What You Staring At? Ying Gao’s Gaze-Activated Dresses, “Vice”, 19.06.2013, https://www.vice.com/en_us/article/ez5g47/ying-gaos-gaze-activated-dresses (accessed: 11.12.2019).
59 S. Press, Dresses that React to the Emotions of Viewers, “Ignant” 2016, https://www.ignant.com/2017/02/03/dresses-that-react-to-the-emotions-of-viewers/ (accessed: 11.12.2019).
60 Y. Gao, Neutralité..., op. cit.
the author, 22 July 2019), primarily in order to protect her intellectual property in the fashion world. However, as Gao depicts in her artist statement, Neutralité displays “an aesthetic and motion reminiscent of microbial life” with its “balletic back and forth” in “robotized movements and shadow plays” between the dress and a spectator.\textsuperscript{61} When a spectator enters the room to view the dress, the artificial intelligence that uses recognition technology detects, extracts, and classifies their facial expression of emotion. It then converts this data into an instruction which is sent to the devices of the dress and which tells the dress to perform certain actions and specific tasks, such as illumination or movement.\textsuperscript{62} But the dress only activates if the interactor does not respond emotionally and if their face stays at “neutral.” That is, if the spectator holds their face still and does not move a muscle, if they maintain a neutral facial expression, and if the technology fails to recognize any facial expression of emotion, then and only then will the dress “light up” and “move about.” Thus “[b]eing asked to take an active part in a ‘living’ system,” the spectator “becomes a component of a self-generated ecosystem” which signifies the plurality of potential relations both within and between living organisms.

Figs. 5 and 6: Ying Gao, Neutralité: Can’t and Won’t, 2016. Photos © Dominique Lafond. Used with permission

Beyond its failure to take into account the contextuality of an expression, additional problems with Basic Emotions Theory when it is applied in artificial intelligence which uses recognition technology become apparent through certain works of

\textsuperscript{61} Ibidem.

\textsuperscript{62} S. Press, Dresses that React..., op. cit.
biometric art. Indeed, Dutch media artist Ruben van de Ven, among others, directly addresses the way Basic Emotions Theory works and how it is used in EmotionAI. With a background in computer programming, film making, and media design, he “challenges alleged objective practices” through his studio art.⁶³ Van de Ven investigated “the computational quantification and categorization of emotions” in his thesis project at the Piet Zwart Institute in Rotterdam, Netherlands, in 2016. And it was there during his master’s that van de Ven began to create a series of biometric artworks, including Choose How You Feel; You Have Seven Options, Emotion Hero, and EYE Without a Face, in which he critically reflects upon this “model of seven emotions.”⁶⁴

In 2016 with Emotion Hero (Figs. 7 and 8), for example, Ruben van de Ven used recognition technology to create a mobile game. Players “train for the right emotional response in every situation.”⁶⁵ The game provides “detailed feedback to improve your score, so you can keep on playing.” And all players compete worldwide “to become the one and only Emotion Hero!” Sponsored by the V2_Lab for the Unstable Media in Rotterdam, Netherlands, interactors had the opportunity to experience the artwork in two forms: as a mobile application for Android devices (phone or tablet) free to download from Google Play;⁶⁶ and as a video projection that showed aggregate scores from gameplay as well as live updates.

Figs. 7 and 8: Ruben van de Ven, Emotions Hero, 2016. (Left) screen capture of video game version on Android phone, showing also the portrait of the artist. (Right) exhibition view with photograph of phone app (foreground) and video projection (background) from the 2016 STATE of Emotion Festival in Berlin, Germany. Used with permission

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⁶³ R. van de Ven, Choose How You Feel; You Have Seven Options, Institute of Network Cultures (INC) Longform, Amsterdam 2017, p. 22, http://networkcultures.org/longform/2017/01/25/choose-how-you-feel-you-have-seven-options/ (accessed: 11.12.2019).

⁶⁴ Ibidem, p. 6.

⁶⁵ Ibidem, Emotion Hero, Proceedings of the 2017 ACM SIGCHI Conference on Creativity and Cognition (C&C ’17), 2017, pp. 422–423, DOI: 10.1145/3059454.3059490/.

⁶⁶ Ibidem, Emotion Hero: Android App, Google Play Store, 2017, https://play.google.com/store/apps/details?id=com.rubenvandeven.emotion_hero (accessed: 11.12.2019).
The biometric artwork *Emotion Hero* first produced by Ruben van de Ven in 2016 was inspired by the video game *Guitar Hero* first published by RedOctane and Harmonix in 2005. With *Guitar Hero*, the player uses a game controller shaped like a guitar in order to simulate playing lead, bass guitar, or rhythm guitar across numerous rock music songs. With *Emotion Hero*, the player uses their smartphone or tablet in order to simulate the facial expression of emotion across numerous prompts and tasks. Once a player has launched *Emotion Hero*, the landing page that welcomes them also provides instructions for game play: “The bar below shows your current feelings. Feel the emotions as they are given by the dots that come down on the screen. If you feel them, we detect them!” As a player interacts with *Emotion Hero*, each level of the game has an increasingly progressive degree of difficulty, in which a player needs to meet specific goals or perform a specific task in order to advance. Game levels include: “Welcome to the Seven” (in reference not to DC’s Justice League but to Ekman’s Basic Emotions Theory); “Smile like you mean it;” “Let’s talk business;” “Show me what you really feel;” and “Please act normally.” The player “scores points by following given cues and making the required facial expressions,” while the game “provides detailed feedback on the mechanics of the players’ face and suggests ways to ‘improve’ ones’ facial expression of a certain emotion.” The game provides feedback to the player on their performance, such as: “when you had to feel 100% fear you showed only 0.84% fear;” “to show more empathy, try to smile 99.99% less;” and “now retry and improve.” To win the game is to perform best at matching your own facial expressions which the facial expression instructed by the game.

Ruben van de Ven began his art-based research into biometrics with a question about the comparative percentages in the summary data that is produced by some recognition technologies, as with the Affectiva SDK used in *Emotion Hero*. “What then does it mean to feel 63% surprised and 54% joyful?” he asked, according to an article that he wrote for the Institute of Network Cultures (INC) Longform in Amsterdam drawn from his master thesis. Van de Ven observed how such “numbers, rather than showing the intensity of an emotion, reflect the statistical similarity with a prototypical expression, which is now established as a desired way of showing a certain feeling – whether true or feigned.” That is, these fractions of one hundred denoted by a percentage sign (e.g. 63% or 54%) do not express a quantity, but rather a probability. The number is not a model for how much this or that emotion is being experienced in the face of the individual whose image is being analyzed by the recognition technology (i.e. some person is 63% surprised). Rather, the number is a model...

67 Idem, *Emotion Hero: Game Demo*, Vimeo video, 02:08, 2017, https://vimeo.com/191263327 (accessed: 11.12.2019).
68 iMotions Biometric Research Platform, Affectiva, https://imotions.com/affectiva-requestdemo (accessed: 11.12.2019).
69 R. van de Ven, *Choose How You Feel…*, op. cit., p. 1.
70 Ibidem, p. 20.
of how likely it is for a given emotion to be the emotion that is being experienced (there is a 54% chance that some person is joyful).

Through his art-based research, and the data collection and analysis conducted with *Emotion Hero*, Ruben van de Ven concluded that “the ambiguity of expressions is often ignored by developers” of recognition technology. Further, Basic Emotions Theory, or “Ekman’s model of seven emotions,” as van de Ven put it, “is not as indisputable as its omnipresence in the various tools might suggest.” This is demonstrated in *Emotion Hero*, to start with, by the fact that players, staged not spontaneous, voluntary but staged, involuntary expressions. To van de Ven, “[k]ey here is not only that the classification procedure in and of itself is flawed.” “[T]he main concern is that the definitions that delineate the technology are flawed.” And so, with this art, the artist poses the question: “As there seems not to be a clear definition of ‘emotion,’ how can one know what is being measured by emotion analysis tools?”

Basic Emotions Theory, therefore, has a number of failings. There are failings in both its method and its model. These include its method for conducting experiments about the facial expression of emotion through a logic process in which subjects match a query to a template image. These also include its model for conceptualizing how the face expresses an emotion as being like how a computer executes its programming. But despite the failings by which it was established, or perhaps in fact because of them, Basic Emotions Theory provides best support for the construction of causal laws as well as common, shared, and even universal classifications. Through Basic Emotions Theory, the facial expression of emotion is defined as measurable, objective, and rational. This is not because face and emotion are observed to be this way amid the phenomena of the world. Rather, as information scientist Kirsten Boehner and her colleagues illustrates, it is because emotions are experimented upon in this way during the process of becoming “studiable.” That is, the “definition of emotion has been altered to fit a particular conception of what science ought to be.” The reality, of course, is more complex and more uncertain. But it is by such a logic that recognition technology becomes operational, as the face is digitized into a form – data – that can be processed by a machine, by a computer, and by artificial intelligence within an automated facial expression recognition system.

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71 *Ibidem*, p. 6.
72 *Ibidem*, p. 16.
73 N.H. Frijda, *The Psychologists’ Point...*, op. cit., p. 75.
74 K. Boehner, R. DePaula, P. Dourish, P. Sengers, *How Emotion Is Made and Measured*, “International Journal of Human-Computer Studies” 2007, Vol. 65, No. 4, p. 278, DOI: 10.1016/j.ijhcs.2006.11.016.
4. The Facial Action Coding System (FACS)

In the early twenty-first century, the basis for most, if not all, emotion recognition is the Facial Action Coding System. FACS is a comprehensive, descriptive sign-based technique for the observation and measurement of all visible facial behaviors. It was designed by today’s world-leading advocate for Basic Emotions Theory, American psychologist Paul Ekman, about the same time as the early researches with recognition technology in the 1970s, and first published in 1978 with a revised edition in 2002. With support in the beginning from the Advanced Research Projects Agency (ARPA), and then for forty years from the National Institute of Mental Health (NIMH), Ekman pioneered face studies with his cross-cultural analysis of the facial expression of emotion in Brazil, Japan, and the US, as well as with uncontacted, preliterate societies in New Guinea and Borneo. Over time, however, his focus shifted from creating a theory of the face to creating a technique for its measurement.

While researching and developing FACS, Ekman and his team at the Human Interaction Laboratory at the University of California San Francisco reviewed fourteen different measurement techniques that had been designed in the fifty years between the 1920s and the 1970s. A fundamental problem with these “theoretically derived systems is that they cannot discover behaviors that were not posited in advance.” In comparison and contrast, FACS can be used for “measuring the sign vehicles that convey the message” rather than making interpretation “judgments about one or another message,” and for classifying “descriptive units” rather than “inferential labels.” That is, FACS can be used to observe and measure “everything the face can do” rather than what it “should do according to a given theory” or concept. Although FACS has all manner of applications for basic research on facial behavior, Ekman still advocates for Basic Emotions Theory. Consequently, the coding system is most frequently associated with emotion phenomena and measuring facial events that include AUs or AU combinations that have been attributed by Ekman among others to so-called Basic Emotions. Thus, research scientists Meredith Whit-
taker and Kate Crawford state in the *AI Now Report 2018*, “AI researchers have taken his work as fact, and used it as a basis for automating emotion detection.”

One of the primary aims of FACS and FACS-based automated facial expression analysis, as contextualized and historicized by Kelly Gates, a scholar in communication and science, “is to make human affective behaviors more *calculable*, open up to precise measurement and classification, thereby making them more amenable to forms of intervention, manipulation and control.”

By applying FACS, a coder either human or machine scores sixty-one individual Action Units. Although based on the muscular anatomy of the forty-three facial muscles, these AUs do not correspond either one-to-one to specific muscles or muscle groups. FACS supports the performance of a spatial analysis of the face, both globally with principal components, as well as locally with particular features, with the use of intensity scores for each Action Unit which are annotated by appending letters (A–E) from trace or very slight (A) to maximal or strongest possible (E). FACS also supports the performance of a temporal analysis of the face, through the observation and measurement of combinations of Action Units, or what is commonly meant by an expression, with the use of timing scores which segment the actions into their onset, apex, and offset.

The Facial Action Coding System, therefore, is an essential part of the technological subface for biometric art that is based on emotion recognition using artificial intelligence, to one degree or another. And it is one material out of the many that is intermedially combined into a biometric artwork, determining its media specificity, and contributing to its signification, as in Ruben van de Ven’s (NL) *Choose How You Feel* (2016), which used FACS-based Affectiva. However, FACS can also be an essential part of the technological surface for biometric art. For example, in 2019 with *Face Design* (Fig. 9), Dutch cosmetic doctor and media artist Marsha Wichers used recognition technology to create a video performance. Wichers filmed herself “making eighteen facial expressions before and after having undergone full facial [Botox] BTX injections,” then analyzed these input video files, and visualized the results in an output video which she shared online.

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81 M. Whittaker, K. Crawford, R. Dobbe, G. Fried, E. Kaziunas, V. Mathur, S.M. West, R. Richardson, J. Schultz, O. Schwartz, *AI Now Report 2018*, AI Now Institute and New York University, New York 2018, p. 14.

82 K.A. Gates, *Our Biometric Future: Facial Recognition Technology and the Culture of Surveillance*, New York University Press, New York 2011, p. 22 (emphasis in original).

83 M. Pantic, M.S. Stewart Bartlett, *Machine Analysis of Facial Expressions*, in: *Face Recognition*, ed. K. Delac, M. Grgic, I-Tech, Vienna 2007, pp. 377–416; M. Pantic, *Machine Analysis of Facial Behavior: Naturalistic and Dynamic Behavior*, “Philosophical Transactions of The Royal Society B” 2009, Vol. 364, pp. 3505–3513, DOI:10.1098/rstb.2009.0235.

84 M. Wichers, *Face Design*, 2019, https://www.projectfacedesign.com (accessed: 11.12.2019).
In her own words, according to her artist statement, Wichers took a stance on how “[f]acial enhancement has almost become a commodity these days. Everybody can by full lips, Botoxed skin and re-shaped cheekbones.” But “[i]f we go too far in facial enhancement, our faces will start to look unnatural and may communicate in a different way.” Today, more and more findings in the behavioral sciences point to “a significant decrease in the strength of emotional experience” with Botox. This includes post-injection drops in facial mimicry, whereby one empathizes with someone else’s emotions by simulating their expression with one’s own face through enactive or mirror neurons, as well as facial feedback, which serves as a channel for communication not only interindividually but also intraindividually by sending information to the brain about emotion so as to modulate and initiate emotional response. Through her “design research,” Wichers “wanted to gain insight into this matter because [she thinks] it is important to be aware of the side effects of our efforts to look young and beautiful.” And her goal with the “project Face Design is to raise awareness and to start a discussion about societal and ethical issues regarding facial enhancement.”

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85 Ibidem.
86 J.I. Davis, A. Senghas, F. Brandt, K.N. Ochsner, The Effects of BOTOX Injections on Emotional Experience, “Emotion” 2010, Vol. 10, No. 3, pp. 433–440, DOI: 10.1037/a0018690.
87 G. Rizzolatti, C. Sinigaglia, Mirrors in the Brain: How Our Minds Share Actions and Emotions, transl. F. Anderson, Oxford University Press, Oxford 2008, pp. 177–190. Originally published in Italian as Specchi nel cervello: Come comprendiamo gli altri dall’interno, Raffaello Cortina Editore, Milan 2006.
88 P. Andréasson, Emotional Empathy, Facial Reactions, and Facial Feedback, “Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Social Sciences” 2010, 58, Uppsala Universitet, Uppsala, Sweden, pp. 11–14, http://www.diva-portal.org/smash/get/diva2:327146/FULLTEXT01.pdf (accessed: 11.12.2019).
89 M. Wichers, Face Design, op. cit.
As Wichers herself accounted on both the project website for *Face Design* and company blog for Noldus, Botox itself is a commercial form of the botulinum toxin (BTX), a neurotoxic protein that is produced by *Clostridium botulinum* and related bacterium. When injected into the human face, BTX prevents release of the neurotransmitter acetylcholine from reaching the nerve endings at the neuromuscular junction, causing flaccid paralysis. That is, BTX blocks the signal from nerve to muscle, inhibiting muscular contraction and thereby facial movement. A few days later, facial muscles relax and facial skin smooths, resulting in the cosmetic effect of reduced facial lines and wrinkles. First used cosmetically in 1987, approved for the treatment of glabellar frown lines by the Federal Drug Administration (FDA) in 2002, and with over 1,801,033 procedures performed in 2018 alone, a 35.8% increase from 2014, Botox today is the top nonsurgical procedure in the US.

In the subface of *Face Design*, Wichers used FaceReader, developed by Noldus Behavioral Science in Wageningen, the Netherlands, first released in 2007, with annual updates, and distributed by VicarVision. When analyzing video, either live up to twenty frames-per-second or prerecorded frame-by-frame, as with Wichers’ *Face Design*, the facial recognition using artificial intelligence worked in three steps. First, the system detected the presence of the artist’s face in the video using the Viola-Jones algorithm. Second, it extracted over 500 points in the face and its texture, using 3D modelling and the Active Appearance Method (AAM), encompassing global position as well as the state of the eyes, eyebrows, lips, and nose which are important for classifying facial expressions. And third, the system, an artificial neural network trained with over 10,000 images manually coded by FACS experts, classified facial expressions related to the Basic Emotions anger, contempt, disgust, fear, happiness, sadness, and surprise, on the basis of Action Units from Ekman’s Facial Action Coding System. Then on the surface of *Face Design*, as Wichers visualized in her online video, the output results from FaceReader as it measured the movements of her own facial morphology included the name and number for each AU, and the intensity of these facial actions on a horizontal bar graph, as well as plots for the valence of the emotion in a circumplex model with unpleasant/pleasant on the x-axis and active/inactive on the y-axis.

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90 *Eadem*, *How Botulinum Toxin Affects Facial Expression*, Noldus Behavioral Research Blog, 25.02.2019, https://www.noldus.com/blog/how-botulinum-toxin-affects-facial-expression (accessed: 11.12.2019).
91 American Society for Aesthetic Plastic Surgery (ASAPS), *Cosmetic (Aesthetic) Surgery National Data Bank Statistics 2018*, pp. 4, 6, https://www.surgery.org/sites/default/files/ASAPS-Stats2018.pdf (accessed: 11.12.2019).
92 Noldus, *FaceReader*, n.d., https://www.noldus.com/facereader (accessed: 11.12.2019).
93 VicarVision, *FaceReader*, n.d., http://www.vicarvision.nl/products/facereader/ (accessed: 11.12.2019).
94 L. Loijens, O. Krips, *FaceReader Methodology Note*, white paper, Noldus Information Technology, 2019, https://www.noldus.com/facereader/resources (accessed: 11.12.2019).
95 J.A. Russell, *A Circumplex Model of Affect*, “Journal of Personality and Social Psychology” 1980, Vol. 39, No. 6, pp. 1161–1178, DOI: 10.1037/h0077714.
Through *Face Design*, Wichers found that it is difficult “to show anger when you can’t frown, or disgust when you can’t depress the corners of your mouth.” Further, she concluded that due to the “paralyzing effect of botulinum toxin, the muscles around the eyes cannot contract. It is giving you less wrinkles but also takes away your ‘real smile’.” Wichers had “self-fired” or “voluntarily activated” her own facial muscles in what is popularly known as a smile, wherein the *orbicularis oculi, pars lateralis* constricts laterally, raising the infraorbital triangle, lifting the cheeks, and gathering the skin medially toward the eye socket from around its lateral edge, and the *zygomatic major* facial muscles contract posteriorly and superiorly, pulling the lip corners upwards. Using Ekman’s FACS and Noldus’ FaceReader to perform self-recognition on her own face, Wichers then classified this facial event as AU6+12 or a combination of AU6, the Cheek Raiser, and AU12, the Lip Corner Puller. In Ekman’s face coding, the Cheek Raiser, which at stronger intensities causes crow’s feet or skin bagging and wrinkling that extends radially from the eye aperture, distinguishes a smile of happiness or so-called “Duchenne smile.” But while “in human perception, this feature makes a very important difference between a real or genuine smile and a fake smile,” in Wichers’ *Face Design*, computer vision “fails to detect the absence of contraction around the eye, and rates both expressions as happy.”

Of course, the face has long been used in society for putting people into boxes made from diagnoses, labels, or symptoms, as well as to constrain or even determine potential interpretations for their behavior through the attribution of causal laws and the assignment of universal classifications. Now emotion recognition “promises a type of emotional weather forecasting.” The “idea that AI systems might be able to tell us what a student, a customer, or a criminal suspect is really feeling or what type of person they intrinsically are is proving attractive to both corporations and governments,” despite the fact that “the scientific justifications for such claims are highly questionable, and the history of their discriminatory purposes well-documented.” Yet, the formal design for recognition technology may employ many logical fallacies from physiognomic inference, such as presuming a stable binary or one-to-one correspondence between facial behavior and emotion phenomena.

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96 M. Wichers, *Face Design, op. cit.*
97 W.E. Rinn, *The Neuropsychology of Facial Expression..., op. cit.*, pp. 12–17.
98 P. Ekman, R.J. Davidson, W.V. Friesen, *The Duchenne Smile: Emotional Expression and Brain Physiology II*, “Journal of Personality and Social Psychology” 1990, Vol. 58, No. 2, pp. 342–253, DOI:10.1037/0022-3514.58.2.342. The “Duchenne smile” is named after French neurologist Guillaume-Benjamin Duchenne de Boulogne, who first reported the facial action, and whose photographs Darwin included in his *Expression*.
99 M. Whittaker et al., *AI Now Report..., op. cit.*, p. 14.
100 G. Boys-Stones, *Physiognomy and Ancient Psychological Theory*, in: *Seeing the Face, Seeing the Soul: Polemon’s Physiognomy from Classical Antiquity to Medieval Islam*, ed. S. Swain, Oxford University Press, Oxford 2007, p. 40.
Conclusion

Principally, the way recognition technology works is through a process of “facialization,” to borrow a term from philosophers Gilles Deleuze and Félix Guattari, which translates the face into higher and higher degrees of abstraction, from a subject of corporeal flesh to an object of scientific calculus. This process “deterretorializes” facial signs away from and out of their organic context and semiotic niche. And it over codes faceness or “faciality” as experienced and lived with an artificial mask. Employing much of the same logic as classical physiognomy, current biometrics is primarily used to make sensible the outside physiological behaviors of the face, in order to make cognizable the psychological phenomena inside of an individual, by computing a person inside out into data that is operational and utilitarian, quantifiable and universal.

Today, facial recognition using artificial intelligence has two main areas of application. The first is identification, done mostly on the basis of the static face from still photographs, and used to make physiological data sensible in face morphology, such as on age, ethnicity, gender, and identity. The second is analysis, done mostly on the basis of the dynamic face from motion pictures, and used to make psychological data cognizeable in face movement, such as on attention, cognition, emotion, intention, and pain. For each application, the classifier that a face is compared to and matched with, whether from the Facial Action Coding System or Basic Emotions Theory, affords for different understandings of what the face is and what it does.

Biometric art which uses facial recognition and emotion recognition is neither an art genre nor an artistic movement (-ism). And neither is it a place of study nor a school of thought. Rather, such biometric art is a contemporary art form in which an artist experiment with the way recognition technology works as an instrument or tool for artistic creation. It is a critical practice with specificity and value which provokes de-automizations and re-negotiations with other human practices, such as facial recognition and emotion recognition. Through its dynamic intersections with these sciences and technologies, biometric art in turn is constitutively entangled with the interpretive processes of a meta-critical reflection. In so doing, biometric art ruptures our everyday habitual and lived experience of the face, revealing the ways in which facial recognition technology and automated facial expression analysis may affect our dispositions, beliefs, and attitudes towards facial behavior and emotion phenom-
ena, how we think about what we feel, and the very nature of “face consciousness.”

Consequently, biometric art is an intellectual and ethical activity. It affords for the conceptual models by which people are classified, computed, and even controlled on the basis of face to be made, manipulated, talked about, and tested across the socio-political imaginary. And across highly diverse art forms, some of this biometric art plays with facial recognition technology, some subverts; some celebrates the accomplishment, some critiques the arrogance; some puts it on stage, some on trial.

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"ALIENS" SPEAKING OUT: SCIENCE FICTION BY AUTISTIC AUTHORS

Abstract: This article discusses depiction of autism in science fiction based on three recent American novels written by autistic authors: Ada Hoffman’s *The Outside* (2019), Kaia Sønderby’s *Failure to Communicate* (2017), and Selene dePackh’s *Troubleshooting* (2018). The novels are discussed in the context of debates about diversity in science fiction, depiction of disability in the genre, and disability and autism studies, particularly in reference to concepts such as authorship, self-expression, and rationality. This is followed by an in-depth analysis of the use of utopian and dystopian impulses in science fiction and tropes such as first contact as well as the specificity of autistic perspectives, particularly in Hoffman’s *The Outside*. The texts propose visions of futures that include disability, specifically autism, and use the narratives of alien encounters to reflect on potential benefits of neurodivergent forms of communication and perception of the world. The article argues that the novels employ science fiction tropes to engage ideas about neurodiversity and cross-cultural communication, contributing both to inclusion of marginalized communities in science fiction and to an expansion of the genre’s repertoire of cultural representations of disability.

Keywords: science fiction, autism, disability, neurodiversity, diversity in science fiction, Ada Hoffman, *The Outside*, Kaia Sønderby, *Failure to Communicate*, Selene dePackh, *Troubleshooting*

The debate about what science fiction is, who it is for, and what topics it should take on, has most recently focused on disability, as the genre has been criticized for its limited representation of this experience and insufficient inclusion of people with disabilities themselves. This article discusses how issues critical for autism studies, including authorship, self-expression, and representation, are thematized in some of the latest American science fiction (sf) novels featuring autistic characters: Ada

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1 This article is a result of a research project entitled *Representation of Autism in Science Fiction* [Wizerunek autyzmu w science fiction] carried out at UMCS and funded by State Fund for Rehabilitation of Disabled People (PFRON). Project no. BEA/000042/BF/D.

2 Thank you to Marta Usiekniewicz, Jędrzej Burszta, and Agnieszka Kotwasińska, for their comments and insight.
Hoffman’s *The Outside* (2019), Kaia Sønderby’s *Failure to Communicate* (2017), and Selene dePackh’s *Troubleshooting* (2018). I situate them in two cultural contexts: that of debates about diversity in science fiction, and about self-determination and agency of autistic people in disability and autism activism. As novels written by self-identified autistic authors, they contribute to a more complex representation of disability in sf, implement the calls for self-advocacy in autistic activism, and offer a new take on some well-trodden sf tropes, such as first contact narratives and the human/non-human divide. This is not to claim that the sole fact of the authors’ identity makes their writings unquestionably emancipatory; after all, a minoritarian identity cannot ensure an unproblematic access to marginalized experience, due to its complexity and changeability. The three authors under analysis are examples of how a minority perspective can be included in sf, but the novels also reflect the limited array of tropes about autism available in the genre and reinforced by its conventions. I begin the article with a discussion of diversity in sf, followed by a close look at the problems inherent in representation of disability, and more specifically autism, in the genre. The next section of the article engages with issues of self-advocacy and authorship, central to autism studies. I then offer an in-depth analysis of the novels, in particular Hoffman’s *The Outside*, situating them in the context of sf publishing and tropes typical of the genre, including its utopian and dystopian impulses and the first contact narrative, where “otherhood” is employed to mark marginalized groups.

I argue that sf authored by autistic writers expands the boundaries of the genre but at the same time remains limited by its tropes, stock characters, and narratives.

Diversity in Science Fiction

As a genre employed to scrutinize the past and present through speculations about the future, science fiction is in some ways uniquely suited for engaging with political debates from a local and global perspective. It can be – and is – used to think about how the future (or futures) involving particular political outcomes can be imagined, as well as who, and on what terms, is assumed to be a part of these futures. Despite the genre’s conservative roots, including legacies of racism, colonialism, and sexism, sf has become more welcoming to the ideas of social justice and voices of racial, sexual, and gender minorities. The possible connection between sf as sites of (re)imagining

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3 A. Hoffman, *The Outside*, Angry Robot, Nottingham, UK 2019; K. Sønderby, *Failure to Communicate*, The Kraken Collective, Coppell, TX 2017; S. dePackh, *Troubleshooting*, Reclamation Press, Columbia, SC 2018.

4 Cf. J. Puar, *I Would Rather Be a Cyborg than a Goddess: Intersectionality, Assemblage, and Affective Politics*, “Philosophia” 2012, Vol. 2(1), p. 59.

5 On “otherhood” in the context of race, see I. Lavender III, *Race in American Science Fiction*, Indiana University Press, Bloomington 2011.

6 For criticism of conservative legacies of SF see e.g. I. Lavender III, *Race..., op. cit.; J. Russ, How to Suppress Women’s Writing*, University of Texas Press, Austin 1983; J. Rieder, *Colonialism and the
possible futures and social change is hinted at by Gloria Anzaldúa: “Nothing happens in the ‘real’ world unless it first happens in the images in our heads.” In this formulation, speculative work of literature is a necessary precondition to political mobilization, whether achieved through utopian visions of possible futures, or dystopian outcomes to avoid. This project of imagining more just and equal futures has led to significant expansions of the genre, which met with opposing reactions, including the 2015 controversies about Hugos, sf’s most prestigious awards.

While this conflict may seem to be of limited importance, it is indicative of larger questions asked in the sf community: what is the place of politics in the genre? What is the importance of identity? How does the genre reckon with its conservative past, and what does it owe its minority readers in terms of representation?

The answer to these questions increasingly seems to be that identity politics is important, and that in fact the “good old science fiction” of space adventures was not devoid of political agenda but, to the contrary, it promoted deeply conservative, if not outright colonialist and racist values. The critical acclaim and popularity of authors such as N.K. Jemisin, Ann Leckie, Nnedi Okorafor or China Miéville indicate that sf readers and critics are interested in stories told from marginalized perspectives and engaging in progressive politics. The inclusion of new voices does not make sf “political” where it was not so previously, but makes it a more diverse genre, promotes stories that had previously gone untold, unacknowledged, or unpromoted, and creates space for writers and readers who had felt ignored or excluded. One example of a tongue-in-cheek commentary on the position of marginalized groups in the community is a series of special issues of the *Lightspeed* magazine, entitled “Queers Destroy Science Fiction,” “Women Destroy Science Fiction,” and “People of Color Destroy Science Fiction.” The titular “destruction” refers to the accusations made by self-professed gatekeepers, but also alludes to the idea of creative destruction, necessary to enable the reshaping of the genre.

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7 G. Anzaldúa, *Borderlands/La Frontera*, Aunt Lute Books, San Francisco 1987, p. 87.
8 A. Wallace, “Sci-Fi’s Hugo Awards and the Battle for Pop Culture’s Soul,” “Wired”, 30.10.2015, https://www.wired.com/2015/10/hugo-awards-controversy (accessed: 17.09.2020).
9 Such conflicts in sf date back to the negative reactions to the New Wave of the 1960s and 1970s, criticized for introducing progressive politics and minority voices in the genre. See S. Delany, *Racism and Science Fiction*, “New York Review of Science Fiction” 1998, August, Iss. 120, https://www.nyrsf.com/racism-and-science-fiction-.html (accessed: 17.09.2020); J. Burszta, *Radykalne głosy, marginalne spojrzenia. Spory o współczesny kanon fantastyki*, in: *Narracje fantastyczne*, eds. K. Olkusz, K.M. Maj, Ośrodek Badawczy Facta Ficta, Kraków 2017, pp. 159–174.
Disability in Science Fiction

A group most recently advocating “destroying” science fiction from the inside out are people with disabilities, as suggested by the 2018 issue of the *Uncanny* magazine, “Disabled People Destroy Science Fiction.” The issue serves as a manifesto on the position of disability as a topic in sf and disabled people as authors and readers of the genre: “Destroy. That’s the brief of this issue. Destroy science fiction. Why? Because disabled people have been discarded from the narrative, cured, rejected, villainized. We’ve been given few options for our imaginations to run wild within the parameters of an endless sky. This issue destroys those narratives and more.”

The biased and limited portrayal of disability in sf is a gap to be filled with new stories, told by disabled people themselves. In sf, as in other types of literature, disability is often used as a metaphor, a “narrative prosthesis,” with little interest in the lived experience of disabled people or the complex possibilities and implications of including disability in the imagined social worlds of the future.

Due to the genre’s investment in technology-driven progress, many sf texts depict disability as a problem to overcome on an individual level or to eradicate on the societal one. The common approach to disability in sf is best described in the title of the most comprehensive academic analysis of the topic, a volume edited by Kathryn Allan, *Disability in Science Fiction: Representations of Technology as Cure*. This title is indicative not so much of the perspective taken by the authors of the articles, who draw on disability studies and employ a critical lens in their research, but of the tendencies apparent in sf itself. Technology often functions as a potential solution to all sorts of problems, and disability tends to be seen as just that – a problem to be solved. Despite the criticism of the “ideology of a cure” and “curative imaginary” in disability research and activism, the idea that disability needs to be cured, eradicated, or otherwise “disappeared” from society remains one of the dominant perspectives, drawing on the medical model of disability and “common sense” assumptions about the unquestionable superiority of life without disability.

Whether because it is cured individually or eradicated through technologies of controlled reproduction and eugenics, disability is rarely found in the imagined fu-
tures of sf. Disability-less futurity is the topic of Alison Kafer’s study, where she argues that the unproblematized and seemingly depoliticized assumptions about what constitutes good life and happy society have rendered a future including disabled people unthinkable. She notes that even in the supposedly progressive imagined space of a feminist utopia, such as Marge Piercy’s *Woman on the Edge of Time*, there is no place for disability. This exclusion is deeply felt by disabled readers and writers of science fiction: “I grew up reading science fiction and I found no mirrors. Imagine what that feels like. Imagine what that feels like, specifically, in the context of bright and infinite tomorrows. [...] This is the future, my books told me. You do not belong here, either.” The fact that sf does not offer much in terms of representation of disability is not just a problem of inclusivity as it may be in other genres, where minority readers want to see their experiences reflected. It seems to run deeper in this case because sf is meant to envision alternative worlds and futures, unbound by the realities of the here and now. This particular erasure suggests a critical failure of imagination when it comes to disability and confirms the power of ableist narrative, as noted by Kafer. The novels under analysis in this article – Ada Hoffman’s *The Outside* (2019), Kaia Sønderby’s *Failure to Communicate* (2017), and Selene dePackh’s *Troubleshooting* (2018) – react to this problem, as they tell stories about futures that include disability, specifically, autism. The autistic perspectives must be analyzed in the context of debates about authorship, self-advocacy, and subjectivity crucial to this community. At the same time, as a disability whose popular representation centers supreme rationality and ontological strangeness, autism is a subject uniquely suited to sf’s concerns of technological progress and alien intelligence.

**Autism and Authorship**

Cultural representations of autism reflect some of the most widespread assumptions about the condition, such as the notion that it robs people of empathy, renders them incapable of self-reflection, and coexists with genius-level math skills. These cultural constructions of autism do more than just (re)create a limited range of narratives about this disability; they are also engaged in competing political and activist agendas around autism. Thus, literature created by self-identified autistic authors needs to be considered on two interconnected levels: that of (re)inventing and reflecting tropes

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14 *Ibidem*, p. 3.
15 *Ibidem*, p. 73.
16 M. Nijkamp, *The Future Is (Not) Disabled*, “Uncanny Magazine” 2018, September/October, Iss. 24, p. 229.
17 For more on the connections between autistic and science fiction communities see chap. 6 of S. Silberman, *NeuroTribes: The Legacy of Autism and the Future of Neurodiversity*, Avery, New York 2015.
ubiquitous in autistic representation, and as an example of self-advocacy, fulfilling the mantra of disability activists, “Nothing about us without us.”

It comes as no surprise that a lot of narratives about autism focus on the ways and means of curing it, as does a significant proportion of organizations founded to help autistic people. As Anne McGuire notes in her analysis of the rhetoric employed in autism advocacy, contemporary organizations in this field actually tend to advocate against autism rather than for autism, or autistic people. Autism is depicted as a bad influence that takes over the “real” person underneath, which closes off the possibility of approaching autism as a way of being, an identity, and a lived experience that, while different from neurotypical, is not in any way worse, in line with the neurodiversity paradigm. These two visions of autism: as a tragedy, an individual and social crisis to be solved, or as a benign expression of human diversity in the realm of thinking, feeling, and experiencing the world, form the fundamental tension in cultural depictions of autism and activism around it.

In a study of early twenty-first century cultural representations of autism, Stuart Murray notes the surprising consistency in the way the condition is portrayed. The trope of the “autistic savant” is so ubiquitous that savantism becomes almost synonymous with autism. Thanks to popular cinematic depictions such as *Rain Man*, autistic genius is assumed to be supremely rational, often involving almost super-human logical and mathematical skills. This image of autism lends itself rather well to sf, a genre invested in stories of mad scientists, technological inventions, and human and non-human intelligence. Some of the most popular sf characters associated with autism and even claimed by autistic people include the Vulcan Spock, the android Data, the genius victim of governmental experimentation River Tam, and other alien or ar-

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18 For a discussion of how this slogan came into being in disability rights, see J.I. Charlton, *Nothing About Us Without Us: Disability Oppression and Empowerment*, University of California Press, Berkeley 1998.
19 A. McGuire, *War on Autism: On the Cultural Logic of Normative Violence*, University of Michigan Press, Ann Arbor 2016, pp. 5, 126; S. Silberman, *NeuroTribes…*, *op. cit.*, pp. 13, 15.
20 A. McGuire, *War…*, *op. cit.*, p. 68.
21 *Ibidem*, p. 7; N. Walker, *Throw Away the Master’s Tools: Liberating Ourselves from the Pathology Paradigm*, in: *Loud Hands: Autistic People, Speaking*, ed. J. Bascom, The Autistic Press, Washington, DC 2012, p. 228. There is a significant debate in the disability and autistic communities about the efficacy of “people first” language, i.e. referring to a person as “a person with autism” rather than an “autistic person.” While there are undoubtedly good reasons to promote the former, as a way of stressing the fact that the people in question are not defined by their disability, I am convinced by self-advocates claiming that in the case of autism, the adjectival version is better because it does not allow for a separation of the condition of autism from the person experiencing it and treats autism as an inherent element of one’s subjectivity (A. McGuire, *War…*, *op. cit.*, p. 7; J. Sinclair, *Why I Dislike ‘Person First’ Language*, in: *Loud Hands…*, *op. cit.*, pp. 223–224).
22 S. Murray, *Representing Autism: Culture, Narrative, Fascination*, Liverpool University Press, Liverpool 2008, p. 22.
23 *Ibidem*, p. 65.
24 *Ibidem*. 
Artificially-modified characters who need to learn to process emotions and control their overly-rational tendencies to become “fully human.” Autistic characters in sf literature also often fall into the same category: the protagonist of Elizabeth Moon’s *Speed of Dark* (2002) makes professional use of his unique ability to recognize patterns but eventually chooses to be cured of autism, supreme logical mind notwithstanding. In Peter Watts’ *Blindsight* (2006), a protagonist with autism-like characteristics is the only one who can communicate successfully with non-self-aware yet intelligent beings that come into contact with the Earth. While the association of autism with genius may seem to contribute to a positive image of autism, it has some negative consequences as well. Firstly, it obscures the internal diversity of the autistic community, as this one particular image of an autistic person, additionally identified with a particular demographic of white, young men, dominates in the public imagination. Secondly, depicting autistic people as “beyond” human in terms of mental capacity relegates them to the blurred edges of humanity. This, in turn, especially in sf, may result in comparisons between autistic people and non-human beings, thus advancing the philosophically and politically repudiated debates about disability and “limits of humanity.”

Cultural and medical discourses contributing to dehumanization of autistic people are in many ways a continuation of similar attempts aimed at mentally disabled people more generally, but they also rely on certain assumptions unique to autism. One of the major paradoxes in how autism is understood is its connection to rationality. On the one hand, it is a disability particularly associated with a high level of rationality, often to the (presumed) exclusion of emotional life and empathy, as evidenced by the “autistic savant” trope. On the other hand, some of the most popular theories of autism seem to deprive autistic people of the ability to reason, including the Theory of Mind (ToM), attributed to Simon Baron-Cohen. According to ToM, the ability to recognize and understand the mental states of others, or empathy, is a typical feature of human nature, and in certain cognitivist approaches it is even seen as the defining

25 Temple Grandin described herself to Oliver Sacks as “an anthropologist on Mars” (O. Sacks, *An Anthropologist on Mars*, Albert A. Knopf, New York 1995), see also R. Groner, *Sex as 'Spock': Autism, Sexuality, and Autobiographical Narrative*, in: *Sex and Disability*, eds. R. McRuer, A. Mollow, Duke University Press, Durham 2012, pp. 263–284; I. Hacking, *Humans, Aliens & Autism*, “Daedalus” 2009, Vol. 138, No. 3, pp. 44–59.
26 E. Moon, *Speed of Dark*, Orbit Books, London 2002.
27 P. Watts, *Blindsight*, Tor Books, New York 2006.
28 S. Murray, *Representing..., op. cit.*
29 Ibidem, pp. 5, 65.
30 Cf. E. Clare, *Brilliant..., op. cit.*, pp. 29–30; L. Carlson, *The Faces of Intellectual Disability*, Indiana University Press, Bloomington 2010.
31 O. Sacks refers to autism as “disorder of affect” in O. Sacks, *An Anthropologist..., op. cit.*, p. 291.
32 M. Yergeau, *Authoring Autism: On Rhetoric and Neurological Queerness*, Duke University Press, Durham 2019, p. 12; S. Baron Cohen, *Theory of Mind and Autism: A Review*, “Special Issue of the International Review of Mental Retardation” 2001, Vol. 23(169).
feature of humanness. The consequence of applying this to autistic people is incredibly dangerous: “Humans are human because they possess a theory of mind, and autistics are inhuman because they do not.” These discourses deny autistic people their humanity based on their supposed mental limitations. Due to the legitimacy they accrue as a result of the domination of medical perspectives on disability, they have far-reaching consequences for the politics of autistic activism.

Debates about autistic people’s capacity for self-reflection and self-expression translates into changes in autism rights movement, where self-advocacy organizations such as Autistic Self Advocacy Network and Autism Network International have gained visibility by centering neurodiversity, accommodations, and support for people living with autism in their political goals. This shift in autism advocacy is also reflected in an interest in autistic autobiographies, including books by Temple Grandin and Donna Williams. As Yergeau points out, this popularity is somewhat paradoxical, considering the fact that autism is assumed to “[contrast] with language, humanness, empathy, self-knowledge, understanding, and rhetoricity” – all qualities that would seem necessary to successfully produce an autobiography. Indeed, such is the reluctance to accept autistic autobiographical accounts that if they are too successful, or the people producing them too articulate, they are deemed “insufficiently” autistic to be representative of the condition, or already cured of it. Yet it seems that the autistic perspective must be centered in any research on narratives about autism. As Murray notes:

It is the presence of the person with autism, in whatever form, that stops the condition being only subject to the workings of metaphor and fascination. Those autistic individuals who speak, write or communicate in some other way make their presence felt through their entry into the domain of cultural representation, and they inform everyone who makes the effort to listen what living with, and in, the condition can be like. And, of course, those who do not communicate in these ways are no less a presence.

For autistic people to speak for themselves and be heard is crucial to changing the limited and often harmful representation of autism, and to conducting ethical and rigorous research into this topic. That is why my analysis of portrayal of autism in sf must also be informed by the identities of the authors of the novels under scrutiny.

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33 A. McGuire, War..., op. cit., p. 47.
34 M. Yergeau, Clinically Significant Disturbance: On Theorists Who Theorize Theory of Mind, “DSQ: Disability Studies Quarterly” 2013, Vol. 33(4), https://dsq-sds.org/article/view/3876/3405 (accessed: 17.09.2020).
35 J. Sinclair, Autism Network International: The Development of a Community and Its Culture, in: Loud Hands..., op. cit., pp. 22–70; A. Ne’eman, The Future (and the Past) of Autism Advocacy, or Why the ASA’s Magazine, The Advocate, Wouldn’t Publish This Piece, in: Loud Hands..., op. cit., pp. 88–97.
36 S. Murray, Representing..., op. cit.; M. Yergeau, Authoring..., op. cit.
37 Ibidem, p. 2.
38 Ibidem, p. 21; A. McGuire, War..., op. cit., p. 14.
39 S. Murray, Representing..., op. cit., p. 16.
The three novels I have chosen to focus on in this article: Ada Hoffman’s *The Outside* (2019), Kaia Sønderby’s *Failure to Communicate* (2017), and Selene dePackh’s *Troubleshooting* (2018), were all written by authors who identify as autistic. The publication history of these novels offer an instructive glimpse into the routes taken by autistic authors to find space in the sf publishing industry. *Troubleshooting* was published by Reclamation Press, a small publisher specializing in books of authors from diverse disability communities. Kaia Sønderby self-published her novel, whose main character was first introduced in a story published on Wattpad, a social storytelling platform connecting writers to readers willing to share their feedback on works in progress. Ada Hoffman is the only one who was noticed by a traditional publishing house – *The Outside*, her debut novel, came out in Angry Robot, a global imprint specializing in speculative fiction. This anecdotal evidence suggests that publishing science fiction in which autism takes center stage is not easy. At the same time, getting stories authored by autistic writers into the hands of the readers is the basic condition for increasing the inclusivity of sf in terms of its representation of disability.

The recent sf novels displace the prototypical autistic subject, which tends to be a young, white man, in favor of different autistic identities. The protagonist of *The Outside* is a queer woman of color, Xandri from *Failure to Communicate* is a queer white woman, and Scope from *Troubleshooting* is a queer person of color whose portrayal suggests nonbinary tendencies if not outright trans identification. Since their gender, sexuality, and race affect the situation of the characters along with their autism, an intersectional perspective is required when analyzing their positions as disabled characters.

**Autistic Utopias and Dystopias**

The novels with autistic protagonists can be seen as part of the project of imagining future worlds that include autistic people outlined in “Disabled People Destroy Science Fiction.” Some of them, for instance dePackh’s *Troubleshooting*, engage in decidedly dystopian modes of storytelling by using near-future settings as an opportunity to extrapolate the oppressive policies, institutions, and ideas of the contemporary ableist world, emphasizing the discrimination of people with disabilities and the threat of eradicating disability. Others, such as Hoffman and Sønderby, create worlds in which disabled people are included and their contributions appreciated. While

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40 See their websites: http://www.ada-hoffmann.com/about/, https://www.reclapress.com/books/selenedepackh/, https://twitter.com/kaiasonderby?lang=en (accessed: 17.09.2020).
41 Hoffman is involved in raising the profile of autism in sf through a long-running series of reviews of speculative fiction that includes autistic characters, entitled *Autistic Book Party* (http://www.ada-hoffmann.com/autistic-book-party/ [accessed: 17.09.2020]).
42 On white men as paradigmatic autistic subjects see S. Murray, *Representing…*, *op. cit.*, ch. 4; A. Willey et al., *The Mating Life of Geeks: Love, Neuroscience, and the New Autistic Subject*, “Signs” 2015, Vol. 40(2).
even the more positive visions are not free of problematic elements, most importantly presenting the productivity of the autistic characters as the condition for their acceptance, all of these stories show what it might mean to imagine disability-full futures.43

The Outside and Failure to Communicate incorporate a positive vision of autism in the future into space opera, a sub-genre of sf whose staple tropes include space travel and aliens. To call attention to their utopian elements is not to say that they lack darkness; The Outside makes significant use of Lovecraftian horror, and in Failure to Communicate mentally disabled people are expected to disappear soon. However, when it comes specifically to imagining a place for autistic people in the world, they offer inspiring possibilities. The autistic protagonist of Failure to Communicate, Xandri, finds a community that values her perspective and is willing to accommodate her needs. Living on a multi-cultural spaceship and serving as an interpreter between various species of aliens, Xandri contributes to her crew but also to the political system at large by facilitating crucial negotiations. At the same time, not only does she encounter people who judge her non-normative behaviors, but she is also quite possibly one of the very few people with mental disabilities left in the universe. Her neurodiversity is a result of her parents not making use of the available reproductive technology that would allow them to screen for disabilities before birth; since Xandri’s birth, such solutions have been universally employed in order to eradicate mental disability. Still, on its small scale as a story of found family and small community, Failure to Communicate acknowledges that an autistic protagonist may find a place where she would be valued for her unique talents and perspective.

In Hoffman’s novel every society has a different way of approaching mental disabilities. The villain of the story, Evianna Talirr, had been a victim of corrective therapies as a child, which has led to her eventual vendetta against humanity, as predicted by her therapist: “If a mind like little Evianna’s does relapse, and remembers the way that we treated her, I can only guess what horrors will then be unleashed.”44 Indeed, Evianna ends up a villain bent on destroying humanity in the name of an epistemic truth that contradicts the official religious and political doctrine, but equally, it seems, for revenge. Her medical files indicate negative outcomes of the supposed therapies as she is diagnosed with “the usual side effects: depression, fearfulness, social withdrawal, loss of interest in friends or in play.”45 They are clearly symptoms not of the original condition, but rather of misconceived treatment, designed to “break the child down utterly to build them up again.”46 Such rhetoric is chillingly reminiscent of the ideas put forward by one of the most famous behaviorists actually working with children with autism in the mid-twentieth century, Ole Ivar Lovass: “You see, you start pretty much from scratch when you work with an autistic child. You have a person in the physical sense – they have hair, a nose and a mouth – but they are not people

43 A. Kafer, Feminist..., op. cit., p. 3.
44 A. Hoffman, The Outside, op. cit., p. 255.
45 Ibidem, p. 254.
46 Ibidem.
in the psychological sense. [...] You have the raw materials, but you have to build the person.”\textsuperscript{47} Much like the dystopian landscape in \textit{Troubleshooting} or the eugenic eradication of neurodivergence in \textit{Failure to Communicate}, Hoffman’s take on the future of autism involves a critique of contemporary issues faced by autistic people.

At the same time, the social and cultural framework of neurodiversity in \textit{The Outside} is hardly clear-cut. While Evianna had undergone oppressive therapies, the protagonist, Yasira Shien, comes from a society that promotes accommodating the needs of its neurodivergent citizens. This is achieved through policies such as service of neurtutors and social training aimed not at changing the autistic person but rather allowing them to function in a neurotypical society, as well as robust systems of medical and social support aimed at mentally disabled people. Her condition is known and for the most part treated as benign variance. While Yasira is still made uncomfortable at times when she interacts with people from other places, the society she comes from serves as an example of appreciating the value of neurodiversity. \textit{The Outside} thus offers a complex depiction of autism in sf: acknowledging the horrors and traumatizing consequences of violent therapies, while also opening up a space for neurodiversity experienced in positive terms.

\section*{Autistic “Aliens”}

Autistic authors reveal the complexities of autistic experiences while making the most of sf as a genre. Two of the novels use first person narration (\textit{Failure to Communicate} and \textit{Troubleshooting}), while the third is written in close third person (\textit{The Outside}), all to emphasize the centrality of an autistic narrator or focalizer. This point of view allows the authors to depict autistic ways of being in the world, including experiences and reactions to sensory stimuli. Sf settings are used to engage with tropes typical of the genre, including first contact with aliens, and reveal the advantages of unique autistic perspectives. At the same time, comparisons between autistic characters and non-human others perpetuate the problematic sf tendency of using minorities as metaphors for broadly understood “otherhood,” or associating various sf “others” (aliens, robots, cyborgs) with real-world minorities. In either scenario, the presence of marginalized communities in the genre becomes symbolic rather than actual.

The novels might serve as a primer of the ways in which autistic people experience the world, particularly in terms of interacting with their environment. Of course, one of the problems with depictions of autism (or disability more generally) is that no single experience of autism is indicative of any others, as expressed in the famous statement by Stephen Shore: “If you’ve met one person with autism, you’ve met one person with autism.”\textsuperscript{48} My point here is not to claim that the representation of autism

\textsuperscript{47} Quoted in M. Yergeau, \textit{Authoring...}, op. cit., p. 116.

\textsuperscript{48} \textit{Leading Perspectives on Disability: A Q&A with Dr. Stephen Shore}, Lime Connect, https://www.limeconnect.com/opportunities_news/detail/leading-perspectives-on-disability-a-qa-with-dr-stephen-shore (accessed: 17.09.2020).
in these texts is universal. Quite the opposite; these autistic authors are invested in portraying the variety and complexity of the autistic experiences, which is achieved largely through detailed descriptions of the characters’ thoughts and behaviors. Yasira, Scope, and Xandri are not one-note creations with one special quality meant to remind the reader occasionally that the character is autistic; instead, their portrayal feels lived-in and complex. At times they have trouble processing overwhelming auditory and sensory input, feeling unpleasant textures and materials, reading others’ emotions, and expressing their own. They find accommodations to these issues or ways of releasing the tension through echolalia, stimming, and therapy. They also clearly see autism as central to their sense of self. When congratulated for successfully hiding her autistic traits, Scope responds: “Autism is what I am, Tom – it’s not something I can beat any more than I can beat being small. I can compensate, come across as what you want me to be for a little while at a time, but I can’t keep it up.”

This statement reflects the approach to autism represented by Jim Sinclair and other self-advocates, who claim that “Autism is a way of being. […] It is not possible to separate the autism from the person.” The autism of these characters is not just a collection of symptoms typically associated with the condition, but it permeates the characters’ points of view. Such an approach seems consistent with the goal of ensuring a complex representation of disability in sf, though these statements of fundamental ontological difference may also contribute to the alienation of the reader, or exoticization of the autistic perspective.

Alien encounter, one of the most popular tropes in sf, offers a direct link between the genre and autism, since autistic people are at times compared to aliens and some also apply this metaphor to themselves. Aliens populate sf in various roles: as allies, enemies, or potential points of reference in more philosophical considerations of the limits of humanity and the possibility of communicating with a fundamentally inaccessible intelligence. The epistemological uncertainty about the status of non-human actors is a central theme of texts about aliens, but also human-made beings such as cyborgs or robots. Some of the novels explore the similarly liminal position of autistic protagonists, when they serve as mediators and facilitators of communication between humans and aliens. Xandri is hired to be a communications specialist; in a universe where different species of aliens must cooperate, her experience in reading body language makes her a good interpreter. As she had to fit in with a neurotypical society by necessity, she worked hard to learn verbal and non-verbal communication. She comments on this experience: “I’d learned to communicate with my own species, which was the hardest thing I’d ever done; understanding other species was, at times, a snap in comparison.”

The outsider perspective equips her with instinct and sensitivity necessary to decode messages produced by utterly foreign types of intel-

49 S. dePackh, Troubleshooting, op. cit., p. 211.
50 J. Sinclair, Don’t Mourn For Us, in: Loud Hands…, op. cit., p. 16.
51 See note 27.
52 K. Sønderby, Failure…, op. cit., p. 9.
ligence. While the idea that an autistic person must prove useful to be accepted by others promotes deeply problematic notions about economically-driven productivity as a condition of inclusion, this trope also offers a new perspective on the (dis)abilities of autistic people, showing that qualities assumed to be their weak points may in fact carry a different meaning in appropriate contexts.

Both of the main characters of The Outside, Yasira, the protagonist, and Evianna, the villain, are autists who share a certain ineffable understanding and are uniquely suited to communicate with an alien force, the titular “Outside.” From the opening pages of the novel, Yasira feels a connection with her former teacher and mentor: her dreams of Evianna provide a premonition about an upcoming tragedy. Evianna, in turn, places confidence in Yasira alone, first choosing her to work together, later sharing her secrets and hoping to make Yasira an ally in a fight against the rest of the humanity. This unique link is partly a result of their shared neurodiversity, but also includes a more uncanny and personal element. As Yasira explains to Evianna, “I suspect the two of us have an understanding others lack, even others of our neuro-type.”53 This connection makes them potential allies, and eventually – when Yasira refuses to cooperate – well-matched opponents. It also allows them to understand and communicate with the “Outside,” an unknown realm beyond the reach of the rational and techno-driven order of the world.

Any contact with the Outside requires a fundamental questioning of the acknowledged reality and is said to result in madness. Yet it seems that the autistic characters are able to access the Outside and not only remain “sane” (or as sane as they were before the contact), but also affect this other dimension. Their mental disability provides them with a certain distance to the officially accepted religious vision of the world, and thus paradoxically allows them mental space to approach the Outside with a clearer head. In Evianna’s case, the prolonged contact with the Outside, with its ontological and ethical relativism and complete indifference towards human life, has led to her similarly disregarding the human cost of her vendetta. As she admits to Yasira, “Life is a lie; death is a lie; from their perspective, why should it matter? It barely matters to me, these past few years.”54 On the other hand, the connection to the Outside makes Yasira a possible mediator between the two worlds. Of course, the marginalized figures whose special abilities allow them to communicate with “the enemy” often pay the price of mistrust and even doubt their own sanity, as was the case with Frodo being affected by the Ring in J.R.R. Tolkien’s saga and Harry Potter speaking parseltongue in J.K. Rowling’s books. Similarly, Yasira is at once a tool used against Evianna and the Outside by the powers that be, and an object of deep suspicion, seen as unreliable in terms of mental stability and consistent allyship. The representatives of the political order who manipulate Yasira into helping them hold her well-being in disregard: “We already have an abundance of mad people. I want

53 A. Hoffman, The Outside, op. cit., p. 261.
54 Ibidem, p. 262.
a madness that works. [...] She needs to be able to work with [Evianna’s theories] intimately and effectively. [...] It will increase her efficacy with Outside; with any luck, the presence of a mentor who remains functional and able to work in the face of Outside symptoms will keep Yasira that much more functional as well.”55 Though contact with the Outside is equated with madness and heresy and thus deemed criminally dangerous, Yasira is expected to withstand it and remain “functional” as an instrument of the people in power. This dovetails with the idea that neurodiversity may only be tolerated when it coexists with unique talents and makes people productive for the society at large.

Hoffman offers an interesting take on the issue of autistic logic and rationality, or lack thereof. Evianna’s and Yasira’s autism supposedly leaves them open to the influence of the irrational, horrific Outside, a realm associated with madness. Yet eventually it is the binding political and religious system that is at fault, covering up the actual complexity of the world and obscuring the alternative dimension of the Outside. While their contact with the Outside involves Lovecraftian horror, loss of subjectivity, and deep trauma, ultimately it seems that Yasira and Evianna have a unique access to the truth, because they are not limited by a conventional view of the world. Of course, such a depiction is also a double-edged sword, as it contributes to the notion that disability, through pain and marginalization associated with it, may lead to a super-human insight into reality.56 While this narrative is thus quite ambiguous, sf tropes allow the author to center the autistic perspective as ultimately more clear-eyed than the neurotypical one.

Conclusion

In many ways, science fiction could be a site of fascinating reinventions of disability representation. Unencumbered by the limitations of realism and primed by debates about inclusion of marginalized voices, it is a genre whose themes, aesthetics, and narratives can easily incorporate disabled and neurodivergent perspectives. While a significant part of this process is practical in nature and involves renegotiations of economic, social, and cultural privilege that results in access to the publishing industry, as well as community institutions such as magazines, conventions, and awards, the purpose of this article was to look closely at some recent novels as examples of such efforts on the part of autistic writers. What is at stake for this particular group is not only a complex and appropriate representation in the genre, but also access to authorship of their own stories. Due to the discriminatory assumptions about autistic people’s subjectivity discussed earlier in the article, stories written by self-identified autistic writers should be approached as both a statement on the importance of inclusion of minority identities in the genre, and a literary expression of advantages of

55 Ibidem, p. 252.
56 This idea may be related to the figure of supercrip, see A. Kafer, Feminist..., op. cit., p. 90.
employing autistic perspectives in sf. In other words, it is not just about what science fiction “owes” the autistic community in terms of representation; the question is also what innovations the autistic creators bring to the table. While conventions of the genre, expectations of the readers, and the experience of living in an ableist world place some limits on the authors’ creative expression, I would argue that the three novels prove that autistic points of view can be employed in sf to great success. As such, these autistic writers and, more broadly, disabled people in general, contribute to expanding the horizons of science fiction fans, as any offering in the genre should.

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PAMIĘĆ PROTETYCZNA I NIEREALNOŚĆ CZASU W SERIALU WATCHMEN

Prosthetic Memory and Unreality of Time in Watchmen

Abstract: Starting from a reflection on the traumatic experience of racism, the author of the article considers the possibility of transmitting the knowledge about the past and retrieving memory, and then points out how the relationships between the past, the present and the future are problematized, if we change the way we think about time, namely when it ceases to be perceived as something real or objective. The point of reference for further considerations is the HBO Watchmen series, made in 2019, which exemplifies the mechanism of prosthetic memory. According to the definition proposed by Alison Landsberg, prosthetic memory includes continuity and rupture. It is connected not only with the individual but the collective dimension as well, as it is related to the sphere of politics. In other words, it is a vehicle thanks to which we can travel to other places and times, and thanks to which the viewer may refer to important social and psychological issues.

Keywords: trauma studies, prosthetic memory, television series, graphic novels, eternalism and philosophy of time

1 czerwca 1921 roku w Tulsie, drugim co do wielkości mieście stanu Oklahoma, który czternaście lat wcześniej został przyjęty do Unii, wybuchły zamieszki na tle rasowym. Kilka set uzbrojonych białych mężczyzn wkroczyło do dzielnicy Greenwood, zamieszkałej przez mniejszość afroamerykańską, pod pozorem przywrócenia porządku i obrony gmachu sądu przed tłumem protestujących, którzy domagali się uwolnienia czarnoskórego nastolatka oskarżonego o gwałt na białej dziewczynie. Podobno dzień wcześniej w godzinach wieczornych doszło do strzelaniny i śmierci jednego ze strażników. Chcąc zapobiec eskalacji przemocy, policja wezwała posiłki – na miejsce przybyła Gwardia Narodowa i rozbroiła mieszkańców Greenwood, wśród których znalazło się wielu weteranów wojennych. W nocy rozpościerało się prawdziwe piekło, ponieważ biali najpierw podłożyli ogień pod liczne budynki, a potem zaczęli strzelać do ludzi uciekających z pożaru. O świcie nad miastem przeleciał...
dwupłatowiec, przygotowując się do ataku z powietrza. Susan Williams, współwłaścicielka Dreamland Theatre, zeznała potem w sądzie, że widziała, jak podpalano jej dom i mordowano bezbronną ludzi, podobne zeznania złożył również Ottowa W. Gurley, właściciel spalonego hotelu i lider lokalnej społeczności. Według oficjalnych danych w starciach zginęło co najmniej 25 osób i spłonęło 35 budynków, jednak w statystykach nie ujęto zwłok wywożonych w ciężarówkach, dlatego przyjmuje się, że ofiar było kilkakrotnie więcej (od 75 do 150 osób)1.

Damon Lindelof, pomysłodawca i scenarzysta serialu Watchmen (2019), za-inspirowany wątkami i postaciami z komiksu Alana Moore’a i Dave’a Gibbonsa, wydanego przez DC Comics w latach 1986–1987, postanowił zacząć pierwszy odcinek od przywołania historii sprzed stu lat. Kilkuminutowa sekwencja inicjalna stanowi stylizowaną rekonstrukcję zamieszek, opartą na dokumentacji fotograficznej i wspomnieniach świadków, choć twórcy zdecydowali się na wyodrębnienie szczególne miejsca, mianowicie budynku Dreamland Theatre – jednego z dwóch kin działających w Greenwood. Chodziło im przede wszystkim o podkreślenie uprzywilejowanej roli obrazów w przywracaniu pamięci o przeszłości i budowaniu więzi międzypokoleniowej, lecz także o wyróżnienie filmu jako narzędzia kształtowania tożsamości zbiorowej, pozwalającego widzom przeżyć to, czego w inny sposób nie mogliby doświadczyć2.

Traumatyczne wydarzenia pokazane są w pierwszej sekwencji z perspektywy dziecka, co niesie z sobą określone konsekwencje. Siedmioletni Will Williams (Danny Boyd Jr.) jest jednym z nielicznych widzów na popołudniowym seansie – jak zwykle towarzyszy matce, która pracuje w kinie jako taper (gra na pianinie). Chłopiec ogląda swój ulubiony film Zaufaj prawu! (Trust in the Law!), wyreżyserowany przez Oscara Micheaux, o zamaskowanym mścicielu Bassie Reevesie – „czarnym szeryfie z Oklahomy”3. Nie zdaje sobie sprawy z tego, że na zewnątrz trwają rozruchy, które zakończą się tragicznie dla jego bliskich. Wywieziony z miasta przez znajomych ojca, przeżyje jako jedyny członek rodziny i po latach wstąpi do szkoły policyjnej, by – jak bohater z dzieciństwa – pilnować prawa i porządku. W jego ślady pójdzie wnuczka, Angela Abar (Regina King), bohaterka serialu Watchmen, ukrywająca się pod pseudonimem Siostra Noc.

1 Szczegółowy opis przebiegu wydarzeń podaje Alfred L. Brophy w książce Reconstructing the Dreamland: The Tulsa Riot of 1921, Oxford University Press, New York 2002.
2 Annette Kuhn zauważyła, że „kino jest zdolne nie tylko do odtwarzania samej czynności zapamiętywania […] lecz również do łączenia osobistych doświadczeń z szerszymi procesami pamięci kulturowej” (Memory Texts and Memory Work: Performances of Memory in and with Visual Media, „Memory Studies” 2010, Vol. 3, No. 4, s. 303).
3 Oscar Micheaux (1884–1951) był pierwszym afroamerykańskim reżyserem i niezależnym producentem, nakręcił ponad 40 filmów niemnych i dźwiękowych, jednak Zaufaj prawu! to dzieło wymyślone przez twórców serialu. Postacią autentyczną jest natomiast bohater tego filmu, czyli Bass Reeves (1838–1910), który w ciągu długiej kariery aresztował podobno 3 tysiące przestępców. Urodził się w stanie Arkansas, w rodzinie niewolników, po wybuchu wojny secesyjnej wstąpił do wojsk konfederackich, a w 1878 roku został zastępcą szeryfa na terytoriach położonych na zachód od rzeki Mississippi.
Sekwencja inicjalna, którą można potraktować jako rodzaj wydarzenia granicz- nego i traumy założycielskiej, określa jeden z podstawowych tematów serialu, mia- nowicie wpływ przeszłości na teraźniejszość, ale jednocześnie – poprzez zestawie- nie z kolejnymi scenami – uświadamia nam, że ciągłość i linearność opowieści nie pasują do narracji traumatycznej, że jedynym sposobem na przedstawienie tego, co nieprzedstawialne, jest epizodyczność i wielogłosowość. Dominick LaCapra stwier- dził, że w aspekcie politycznym trauma założycielska „może być sposobem na od- zyskanie historii i przekształcenie jej w mniej lub bardziej sankcjonujące podstawy życia w teraźniejszości”.

Patrząc na to z drugiej strony, traumatyczne wydarzenia, które są wciąż na nowo przeżywane, prowadzą do niemożności wyzwolenia się spod władzy przeszłości. Masakra, do jakiej doszło sto lat temu w Tulsa, przez długi czas pozostawała w zapomnieniu, zepchnięta gdzieś na margines, wymazana z oficjalnego dyskursu. Nie opisywano jej w podręcznikach historii ani nie pokazywano na ekranie kinowym, co do pewnego stopnia można tłumaczyć naturą pamięci traumatycznej, która wiąże się z „opóźnioną czasowością i okresem latencji”.

Wychodząc od refleksji nad traumatycznym doświadczaniem rasizmu, chciałbym zwrócić uwagę na możliwość przekazywania wiedzy o przeszłości i odzyskiwania pamięci, a następnie pokazać, w jaki sposób związki łączące przeszłość, teraźniejszość i przyszłość ulegają problematyzacji za sprawą zmiany sposobu myślenia o czasie, który przestaje być postrzegany jako coś istniejącego realnie czy obiektywnie. Pragę zaczęć najpierw od pytania, które zadała niegdyś Marianne Hirsch, o to, kto ma sprawować pieczę nad traumatyczną przeszłością pokoleń i jak przechowywana jest pamięć o tragicznych wydarzeniach. Amerykańska badaczka zwróciła uwagę na uprzywilejowaną rolę rodziny jako miejsca przekazywania wspomnień oraz fotografii jako materialnego śladu, pozostałości po tych, którzy odeszli. Nie tylko zdjęcia, lecz także filmy i seriale telewizyjne pozwalają przyjrzeć się niepowrotnie utraconej przeszłości, stają się narzędziami umożliwiającymi wgląd w wydarzenia, w których bezpośrednio nie brało się udziału, a także swoistymi katalizatorami w dyskusjach na temat historii.

Obrazy filmowe stanowią rodzaj pamięci protetycznej – by posłużyć się określe- niem Alison Landsberg – ponieważ dzięki nim człowiek zyskuje zdolność naby- wania nowych wspomnień oraz nawiązywania głębszego, bardziej osobistego kont-aktu z odległą przeszłością. Pamięć protetyczna zawiera w sobie ciągłość i zerwanie, łączy się nie tylko z wymiarem jednostkowym, ale i zbirowym (ma związek

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4 Pojęć „wydarzenie graniczne” i „trauma założycielska” używam w znaczeniach nadanych im przez Dominicka LaCaprę w książce Historia w okresie przejściowym. Doświadczenie, tożsamość, teoria krytyczna, przeł. K. Bojarska, Universitas, Kraków 2009.

5 Ibidem, s. 78.

6 Ibidem, s. 155.

7 M. Hirsch, Pokolenie postpamięć, przeł. M. Borowski, M. Sugiera, „Didaskalia” 2011, nr 105, s. 28.

8 Zob. A. Landsberg, Prosthetic Memory: The Transformation of American Remembrance in the Age of Mass Culture, Columbia University Press, New York 2002, s. 2.
z płaszczyzną polityczną), jest wehikułem, dzięki któremu przenosimy się w inne miejsca i inne czasy. Jej działanie objawia się w szczególny sposób na poziomie doznania afektywnych, wywołanych przez iluzję parcympacji i odbieranych zmysłowo przez ciało.

Jednym ze sposobów przedstawienia pamięci zapaśnoodnionej w serialu *Watchmen* są rozbudowane sekwencje retrospekcyjne w odcinkach szóstym i siódmym, w których główna bohaterka – po zażyciu zakazanych pigułek o nazwie Nostalgia – zyskuje dostęp do wspomnień dziadka (Louis Gossett Jr. i Jovan Adepo). Nie chodzi bynajmniej o możliwość „zobaczenia” tego, co widział Will Williams, lecz o doznanie somatyczne, swoiste ożywienie emocji, jakie towarzyszyły w danej chwili mężczyźnie. Bohaterka uświadomia sobie, że jej czas „wypadł z kolein”, że przeszłość miesza się z teraźniejszością – to wywołuje deorientację i niepewność co do ontologicznego statusu wydarzeń, w których (bezp)pośrednio bierze udział. Angela przeżywa wszystkie momenty zwrotne w życiu dziadka: przedwczesną śmierć rodziców, strach z powodu opuszczenia, dzień ukończenia szkoły policyjnej, codzienne zmagańie się z rasizmem w pracy i na ulicy, pobicie przez kolegów z posterunku, a wreszcie decyzję o przeciwdstawieniu się przemocy i walce z przestępczością w przebraniu Zakapturzonego Sędzia. W ciągu kilku miesięcy tajemniczy mężczyzna w kapcieze ze sznurem zawiesonym na szyi stał się wzorem do naśladowania dla innych zamaskowanych mściicieli, którzy w 1939 roku założyli stowarzyszenie o nazwie Gwardziści (Minutemen).

Jeśli zgodzimy się, że pamięć protetyczna przekazywana jest na poziomie afektywnym, to możemy uznać, że w procesie przywoływania wspomnień zawsze wychoǳimy od doznania cielesnych. Ciało jest nośnikiem pamięci, a zarazem miejscem krzyżowania się różnych płaszczyzn czasowych, co w serialu zostało pokazane w sposób bardzo dosłowny, między innymi poprzez strach i obrzydzenie, jakie odczuwa Angela Abar, przeżywając traumę linczu, którego ofiarą padł jej dziadek. To zapaśnoodzone doznanie przypomina mechanizm postpamięci, definiowany przez Marianne Hirsch jako relacja łącząca pokolenie biorące udział w doświadczeniu kulturowej lub kolektywnej traumy z kolejnym, które „pamięć” jest wyłącznie dzięki opowieściom, obrazom i zachowaniom, wśród których

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9 Ibidem, s. 8.

10 W elitarnym gronie Gwardzistów znaleźli się: Kapitan Metropolis (Nelson Gardner), Jedwabna Zjava (Sally Jupiter), Nocny Puchacz (Hollis Mason), Dolarówka (William Brady), Człowiek-Cma (Byron Lewis), Komendant (Edward Blake), Sylwetka (Ursula Zandt) i Zakapturzony Sędzia (w komiksie jego tożsamość pozostała zagadką). Zob. A. Moore, D. Gibbons, *Strażnicy*, przeł. J. Drewnowski, Wydawnictwo Egmont, Warszawa 2015, s. 67–70. W latach 60. grupa wznowiła działalność pod nową nazwą – Pogromcy Zbrodni (Crimebusters) – i w zmienionym składzie (dołączyli m.in. Doktor Manhattan, Ozymandiasz i Rorschach).

11 Zob. J. Bennett, *Wnętrze, zewnętrza: trauma, afekt i sztuka*, przeł. A. Kowalcze-Pawlik, T. Bilczewski, w: *Pamięć i afekty*, red. Z. Budrewicz, R. Sendyka, R. Nycz, Wydawnictwo IBL PAN, Warszawa 2014, s. 146, 154.
dorastali. To doświadczenie zostało im przekazane w tak emocjonalny sposób, że wydaje się fundamentem ich własnej pamięci. [...] Dorastanie w kręgu tak potężnych, odziedziczonych wspomnień oraz opowieści o czasach, kiedy nas jeszcze nie było na świecie lub nie mieliśmy świadomości, co się wokół nas dzieje, niesie ze sobą niebezpieczeństwo wyparcia czy wręcz wymazania własnych opowieści i doświadczeń przez wspomnienia poprzedniego pokolenia12.

Pomimo sugerowanego przeze mnie pokrewieństwa łączącego pamięć protetyczną z postpamięcią – obie formy są odmianami pamięci zapośredniczonej, działają na podstawie afektywnego związku między przeszłością i teraźniejszością oraz pozwalają na doświadczenie wydarzeń, w których bezpośrednio nie brało się udziału – nie należy zapominać o różnicy między pokoleniowego transferu, dlatego nie musi być przekazywana w obrębie rodziny13. Jednak w serialu Damona Lindelofa jest inaczej: pojęcia te uzupełniają się i przecinkają, ponieważ technologicznie zapośredniczone („wszczepione”) wspomnienia okazują się częścią rodzinnego dziedzictwa, którego w inny sposób nie można było przekazać.

Doświadczenie zastępcze, czyli całkowite utożsamienie się z przeżyciami drugiej osoby, może wywołać szereg zaburzeń osobowości. Z tego powodu bohaterka zostaje poddana tak zwanej „mnemodializie”, czyli terapii polegającej na usuwaniu cudzych wspomnień i oczyszczaniu pamięci z zewnętrznych naleciałości. Czy istnieje różnica między wspomnieniami „autentycznymi” a tymi zapośredniczonymi technologicznie (w tym wypadku dzięki medycynie)? Alison Landsberg podkreśla, że choć pamięć protetyczna nie jest skutkiem przeżytych doświadczeń w tradycyjnym rozumieniu tego słowa – przypomina raczej sztuczną kończynę, protezę nałożoną na ciało – to jednak pozwala na przekroczenie granic rasowych, klasowych i płciowych. To dzięki niej można uzyskać dostęp do wiedzy, której inaczej by się nie posiadało, i odczuć bliskie pokrewieństwo z innymi ludźmi, doświadczyć tego samego, co oni14. Wspomnienia protetyczne odmieniają nasz stosunek do różnych spraw zarówno w wymiarze afektywnym, jak i politycznym. Mogą podważać dotychczasowe poglądy, ale również przyczynić się do odzyskania utraconego dziedzictwa, naprawienia zerwanych więzi międzypokoleniowych (nawet jeśli ich odbudowa prowadzi do konfrontacji z wiedzą o tym, co uczynili i kim naprawdę byli przodkowie).

Historia rodzinna splata się w serialu z historią społeczną, czyli opowieścią o przesładowaniach rasowych, walce z przestępczością i zmaganiach z przemocą symboliczną, która przejawia się w przemilczeniu niewygodnych faktów. Zyskując dostęp do nieznanych epizodów z życia własnej rodziny, Angela przekonuje się, że poznanie przeszłości odmienia teraźniejszość i pozwala spojrzeć na różne wydarzenia z niedostępej wcześniej perspektywy – tworzy poniekąd alternatywny wariant

12 M. Hirsch, Pokolenie..., op. cit., s. 29.
13 Na podobieństwa i różnice między postpamięcią i pamięcią protetyczną zwraca uwagę Amy Kaminsky w artykule Memory, Postmemory, Prosthetic Memory: Reflections on the Holocaust and the Dirty War in Argentine Narrative, „Hispanic Issues On Line” 2014, Vol. 14, s. 112.
14 Zob. A. Landsberg, Prosthetic Memory..., op. cit., s. 21–22.
znanej jej rzeczywistości. Jak pisze Anna Mach: „historia oddziałuje o tyle, o ile po- wtarza się i powraca jako to, co wyparte, przejawiając się w miejscach przesunięcia, przemieszczenia, może błędę”\(^{15}\).

Przyswajanie odległych wydarzeń w sposób zapośredniczony odciska piętno i od- mienia człowieka nie tylko psychicznie, ale i fizycznie, ponieważ pamięć pozosta- wia ślady na ciele, czy może raczej należałyby powiedzieć: blizny po „afektywnym zaangażowaniu”\(^{16}\). Odnosi się to zwłaszcza do pamięci traumatycznej, w której wciąż na nowo przeżywa się wydarzenie graniczne, nie mogąc nabrać do niego dystansu. Bohaterka w bolesny sposób odczuwa dyskryminację, której doświadczył jej dziadek, i przekonuje się o tym, że doznania cieleśnie (jak wstręt czy mdłości) pozostają nie- kontrolowane. W alternatywnym świecie, w jakim osadzona jest akcja serialu – Stany Zjednoczone wygrały wojnę w Wietnamie, służby specjalne tatuszowały aferę Water- gate i dzięki poprawce do konstytucji Richard Nixon pełnił funkcję prezydenta przez sześć kadencji – nadal działają organizacje białych suprematystów na wzór dawnego Ku Klux Klanu, których członkowie wyrażają niezadowolenie z powodu ustawy po- zwalającej wypłacać odszkodowania dla ofiar prześladowań i ich potomków\(^{17}\).

Pamięć protetyczna jest w *Watchmenach* związana z dziedzictwem amerykań- skiego rasizmu oraz próbą odysskania tego, co utracone, a przynajmniej przypomnie- nia o stracie. Praca pamięci daje szansę ocalenia przeszłości przed zapomnieniem, uświadamia nam, że „oficjalne uznanie krzywdy i symboliczne zadośćuczynienie ofiarom to często dopiero pierwszy krok, stanowiący warunek *sine qua non* w procesie przezwyciężenia skutków urazu”\(^{18}\). Na przekór lansowanej na początku no- wego stulecia ideologii postrasowego społeczeństwa – Damon Lindelof postanowił pokazać w swoim serialu iluzoryczność tego projektu oraz uprzytomnić widzom konieczność powrotu do kwestii rasowych w dyskursie politycznym, społecznym i kulturowym\(^{19}\).

\(^{15}\) A. Mach, *Świadkowie świadectw. Postpamięć Zagłady w polskiej literaturze najnowszej*, Fundacja na rzecz Nauki Polskiej, Warszawa–Toruń 2016, s. 68.

\(^{16}\) Alison Landsberg posługuje się pojęciem „afektywnego zaangażowania” na określenie eksperymental- nego sposobu doświadczania przeszłości na poziomie taktylnym i materialnym poprzez „pobudzenie” ciała. Zob. A. Landsberg, *Engaging the Past: Mass Culture and the Production of Historical Know- ledge*, Columbia University Press, New York 2015, s. 3.

\(^{17}\) W alternatywnej Tulsie działa Centrum Dziedzictwa Kulturowego Greenwood – rodzaj nowoczesnego muzeum, wzorowanego na otwartym w 2016 roku w Waszyngtonie National Museum of African American History and Culture – w którym można składać wnioski o odszkodowanie po wcześniejszym ustaleniu pokrewieństwa z mieszkańcami Greenwood z czasów masakry.

\(^{18}\) A. Mach, *Świadkowie świadectw...*, op. cit., s. 63.

\(^{19}\) Alison Landsberg łączy ideę postrasowości z okresem prezydencji Baracka Obamy oraz produkcjami filmowymi i telewizyjnymi z lat 2008–2015, w których podkreślano, że czynniki rasowe nie odgrywają już istotnej roli. Zob. A. Landsberg, *Post-Postracial America: On Westworld and the Smithsonian National Museum of African American History and Culture*, „Cultural Politics” 2018, Vol. 14, No. 2, s. 199–200.
Twórcy udało się zrealizować założone cele między innymi dzięki „prze-pisaniu” wątków zaczerpniętych z komiksu Alana Moore’a i Dave’a Gibbonsa. Niepewność co do prawdziwej tożsamości Zakapturzonego Sędziego pozwoliła na powiązanie tej postaci z Willem Williamsem, dzieckiem ocalałym z masakry w Tulsa, a dzięki temu na połączenie jego historii z opowieściami o zamaskowanych mścicielach z lat 40. Równie daleko idące konsekwencje dla interpretacji wydarzeń fabularnych miała przemiana Doktora Manhattana z niebieskiego półboga w czarnoskórego Calvina Abara (Yahya Abdul-Mateen II). Z jednej strony autorom chodziło o krytyczne nawiązania do nurtu blaxploitation movie, z drugiej zaś do komiksów z lat 70. z czarnoskórymi postaciami w rodzaju Czarnej Pantery, Brata V oodoo czy Luke’a Cage’a. Warto zwrócić uwagę na fakt, że rysunkowy wizerunek Misty Knight przypomina tytułową bohaterkę z filmu Sister Night, który w dzieciństwie oglądała Angela i z którego po latach zaczerpnęła swój pseudonim20.

Pomysł odczytania postaci Zakapturzonego Sędziego i Doktora Manhattana w kluczu rasowym ma swój odpowiednik w strategii przyjętej przez Roberta Moralesa i Kyle’a Bakera, którzy w 2003 roku opublikowali siedmioczęściową serię o przygodaach pierwszego Kapitana Ameryka, zatytułowaną Truth: Red, White & Black. Główny bohater komiksu, Isaiah Bradley, należał do dwustuosobowej grupy czarnoskórych mężczyzn, na których wojskowi lekarze w czasie II wojny światowej przeprowadzali eksperymenty w celu wyhodowania żołnierzy o nadludzkich możliwościach. Przystępując do dekonstrukcji mitu superbohaterskiego oraz demoniasta rasistowskich stereotypów tkwiących u podstaw wielu opowieści tego typu, autorzy posłużyli się świadomą prowokacją – zwrócić uwagę na podobieństwo między stosunkiem amerykańskiego rządu do afroamerykańskiej mniejszości a działaniami podejmowanymi przez nazistów wobec społeczności żydowskiej21.

Problem pamięci oraz przekazywania wiedzy o przeszłości jest w serialu znacznie bardziej skomplikowany i nie ogranicza się wyłącznie do kwestii rasistowskiego dziedzictwa Ameryki, ponieważ niemal wszyscy bohaterowie – niezależnie od pochodzenia etnicznego – zmagają się z traumatycznymi wspomnieniami, które

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20 Siostra Noc jest filmem zaliczanym do nurtu blaxploitation, lecz – podobnie jak Zaufaj prawu! – wymyślonym na użytek serialu. Misty Knight to była funkcjonariuszka nowojorskiej policji, która zadebiutowała w komiksie Marvela w 1975 roku. Czarna Pantera jest władczynią fikcyjnego królestwa Wakandy i przypomina wyidealizowany wizerunek afrykańskiego przywódcy – jest nieprzekupny, wykształcony i sprawiedliwy. W latach 70. Marvel wydał serię Jungle Action, w której czarnoskóry superbohater walczył m.in. z członkami Ku Klux Klana. Więcej informacji na temat afroamerykańskich postaci z komiksów przynosi książka Adilifu Namy Super Black: American Pop Culture and Black Superheroes, University of Texas Press, Austin 2011.

21 Zob. C. Francis, American Truths: Blackness and the American Superhero, w: The Blacker the Ink: Constructions of Black Identity in Comics and Sequential Art, eds. F. Gateward, J. Jennings, Rutgers University Press, New Brunswick 2015, s. 137. O rasistowskim podłożu komiksów o superbohaterach pisze także Aldo Regalado w Modernity, Race, and the American Superhero, w: Comics as Philosophy, ed. J. McLaughlin, University Press of Mississippi, Jackson 2005, s. 86.
Dla Doktora Manhattana czas jest iluzją – nic nie jest wcześniejsze ani późniejsze, jako że wszystkie wydarzenia rozgrywają się równocześnie\(^{23}\). Przeszłość, teraźniejszość i przyszłość są w równym stopniu realne, ponieważ z jego punktu widzenia rzeczywistość nie jest osadzona w czasie. Umowne są również określenia przestrzenne: „tutaj” – podobnie jak „teraz” – jest złudzeniem, czy może raczej konwencją wynikającą z uwarunkowania ludzkiej percepcji. Patrząc na świat z perspektywy Doktora Manhattana, wydaje się, że wszystko jest stałe i niezmienne (jak u Parmenidesa). Odrzucenie możliwości zmiany pociąga za sobą eliminację pojęcia czasu, które okazuje się czymś zbędnym, w zasadzie nierealnym\(^{24}\). „Nie mogę zapobiegać przyszłości. Dla mnie to już się dzieje” – mówi Doktor do Janey Slater w komiksie. „Wszystko jest z góry ustalone. Nawet moje reakcje” – powtórzy to innymi słowami w rozmowie z Laurie Juspeczyk.\(^{25}\) Serialowym odpowiednikiem tych scen jest „pierwsze” spotkanie z Angelą – pokazane w odcinku ósmym – podczas którego bohater przedstawia swój „punkt widzenia” i uprzedza ją, że przeżyją szczęśliwie dziesięć lat, lecz ich małżeństwo zakończy się tragicznie.

Sposób rozumienia czasu przez Doktora Manhattana można wyjaśnić poprzez odniesienie do szczególnej teorii względności. Albert Einstein napisał, że „rozróżnienie pomiędzy przeszłością, teraźniejszością i przyszłością jest niczym innym, jak uparcie podtrzymywaną iluzją”\(^{26}\). Od początku ubiegłego stulecia wielu fizyków i filozofów nauki zgadzało się z powyższą opinią, powtarzając, że czas jest wyłącznie pewnym złudzeniem, które wynika z tego, że nasz umysł skłania się do postrzegania zdarzeń jako uporządkowanych w czasie.\(^{27}\) Jak tłumaczy Michał Heller: „Wrażenie pły...
nięcia czasu-przemijania powstaje w naszej świadomości, która tylko jakby w jednym punkcie styka się z czasoprzestrzenią i ten punkt styku nieustannie przesuwa się w kierunku, który nazywamy przyszłością (podobnie jak toczące się koło tylko w jednym punkcie swojego obwodu styka się z nieruchomą drogą)\textsuperscript{28).

Już na pierwszy rzut oka widać rozdźwięk między intuicyjnym pojmowaniem kategorii czasowych a sposobem, w jaki funkcjonują one w fizyce relatywistycznej, zwłaszcza wśród zwolenników teorii wszechświata blokowego, jak David Hugh Mellor i Paul Davis\textsuperscript{29}. Dla eternalistów – jak zazwyczaj określa się uczonych zaprzezczających realności czasu – wszystkie płaszczyzny temporalne są równorzędne pod względem onologicznym, co niesie ze sobą określenie konsekwencje nie tylko natury poznanowej, ale i egzystencjalnej, ponieważ upływ czasu łączy się z kwestią tożsamości osobowej oraz tożsamości rzeczywistości w otaczającym nas świecie\textsuperscript{30}.

Nasze istnienie opiera się na silnym poczuciu trwałości przedmiotów i ludzi oraz pragnieniu stabilności, bez czego trudno wyobrazić sobie egzystencję, ale jeśli spojrzmy na świat oczami Doktora Manhattana, będziemy musieli przyznać, że niewątpliwie jest określić porządek zdarzeń na osi czasu. Chcąc zrozumieć jego sposób myślenia, należy zacząć od zakwestionowania przyjętego założenia, że wszelkie zjawiska mają swoją przyczynę i rozwijają się zgodnie z określonym kierunkiem. Żyjemy w przeświadczeniu, że czas jest nieodwracalny, że rozbite naczynie nie może odzyskać swojej wcześniejszej formy, że chcąc zaparzyć herbatę, trzeba najpierw zagotować wodę. Wydaje się, że istnienie „strzałki czasu”, która wskazuje jeden kierunek – od przeszłości do przyszłości, a nigdy odwrotnie – znajduje potwierdzenie w naszych wspomnieniach i przewidywaniach. Dla Doktora Manhattana wszystko to jest wyłącznie subiektywnym wrażeniem, które sprawia, że ludzie nie są w stanie postrzegać zjawisk inaczej niż w sposób narzucony im przez mózg, który porządkuje i interpretuje informacje oraz wytwarza poczucie ciągłości\textsuperscript{31}.

Zgodnie z teorią wszechświata blokowego wydarzenia nie „stają się”, lecz „są”. „Nie doświadczam czegoś takiego, jak «zanim» – mówi Doktor Manhattan do Angeli Abar. – Wszystko po prostu jest”. Pragnąc wytłumaczyć jej, na czym polega wizja

\textsuperscript{28} M. Heller, \textit{Ontologiczne zaangażowania współczesnej fizyki}, w: \textit{idem}, \textit{Filozofia i wszechświat}, Universitas, Kraków 2006, s. 143.

\textsuperscript{29} Zob. P. Davis, \textit{Czas. Niedokończona rewolucja Einsteina}, przel. L. Kallas, Prószyński i S-ka, Warszawa 2002. Nie zamierzam szerzej omawiać sporów o realność upływu czasu, jakie toczą prezentanci – przekonani o jego obiektywnym istnieniu – z eternalistami, dlatego zainteresowanych odsyłam do cytowanych przeze mnie prac Jerzego Golosza i Jarosława Macieja Janowskiego.

\textsuperscript{30} Zob. J. Gołosz, \textit{Upływ czasu i ontologia}, Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2011, s. 105. Autor książki przedstawia argumenty, które przeczą sposobowi pojmowania czasu przez eternalistów.

\textsuperscript{31} Jak pisał Hermann Weyl, jeden z najwybitniejszych matematyków XX wieku: „Świat obiektywny po prostu jest, a nie się dzieje. To tylko moja świadomość, pełnąjąc wzdłuż linii świata mego ciała, ożywia wycinek świata jako przelotny obraz w przestrzeni, który w sposób ciągły zmienia się w miarę upływu czasu”. Cyt. za: L. Smolin, \textit{Czas odrodzony. Od kryzysu w fizyce do przyszłości wszechświata}, przel. T. Krzysztoń, Prószyński i S-ka, Warszawa 2015 (e-book).
bezczasowego świata, bohater obrazowo opowiada, że dla niego wszystkie zdarzenia zachodzą (względnie) równocześnie, że siedzi razem z nią w wietnamskiej kawiarni w 2009 roku, zajmuje się terytoryalizacją jednego z księżyków Jowisza, jest żydowskim dzieckiem, które ucieka z nazistowskich Niemiec w 1936 roku, oraz szczęśliwym mężem i ojcem trójkę adoptowanych dzieci w 2019 roku.

Z perspektywy zdroworozsądkowej wydaje się, że to czas newtonowski – będący abstrakcyjną linią o wyznaczonym kierunku – prawidłowo opisuje porządek zdarzeń, jednak z punktu widzenia szczególnej teorii względności układ ten nie jest tak oczywisty, ponieważ strzałka czasu nie ma określonego kierunku i wszystko, co nigdy zaszło, jest równie realne, jak to, co dopiero nastąpi32. Można powtórzyć za Julianem Barbourem, że to „wspomnienia sprawiają, że jesteśmy obecni w tym, co nazywamy przeszłością, a nasze oczekiwania dają nam przedsmak tego, co nazywamy przyszłością”33. Wydarzenia są przez nas zapamiętywane ijawają się jako uprzednio przestawione chronologicznie – i to dzięki temu procesowi powstaje wrażenie przemijania – lecz nasze postrzeganie teraźniejszości ogranicza się wyłącznie do osobistych przeżyć.

Mimo że wszechświat Doktora Manhattana jest bezczasowy, wydaje się, że nie do końca funkcjonuje tak, jak rozumieją go eternaliści. Dla bohatera każdy moment życia jest chwilą aktualną, podczas gdy w teorii wszechświata blokowego nie ma miejsca na chwile aktualne, które zastąpione są przez zdarzenia punktowe (jak w czasoprzestrzeni Minkowskiego). Jego świat jest bezczasowy w tym sensie, że nic nowego się w nim nie „dzieje”, że wszystkie zdarzenia „już tam są” (choć nie tworzą linearnego ciągu, jak w ujęciu newtonowskim). „Obraz nas samych rozdzielonych na równoległe chwile aktualne może być niepokojący, ale samo zjawisko jest dobrze znane – powiada Julian Barbour. – Jesteśmy przyzwyczajeni do istnienia w różnych chwilach aktualnych i istnienia w nieco innej formie w każdej z nich – jest to po prostu efekt upływu czasu, jak się go zwykle pojmuję”34.

Doświadczenie trwania jest czymś wtórnym, co pojawia się jedynie w naszej świadomości. Wrażenie ciągłości wznoszą „kapsuły czasu” – jak nazywa je Barbour – czyli zapisy tego, co minęło, a co postrzegane było przez nas jako rozgrywające się „tu i teraz”. Zapisy te są dla nas realne i stanowią przyczynę naszej wiary w zjawisko czasu. „Cała wiedza dotycząca przeszłości w istocie zawiera się właśnie w owych zapisach. Im bardziej przeszłość staje się realna i namacalna, tym większa spójność zapisów pamięciowych”35. Zapis to struktura, która wydaje się opowiadać spójną historię.

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32 Zob. H. Price, Strzałka czasu i punkt Archimedesa. Nowe kontrowersyjne spojrzenie na czas i współczesną fizykę, przeł. P. Lewiński, Amber, Warszawa 1998.
33 J. Barbour, Koniec czasu. Nowa rewolucja w fizyce, przeł. T. Lanczewski, Copernicus Center Press, Kraków 2018 (e-book).
34 Ibidem. Szukając argumentów przemawiających za koncepcją bezczasowego wszechświata, Barbour odwołuje się do teorii względności Einsteina, zasady Macha, funkcji falowej, równań Schrödingera oraz Wheelera–DeWitta.
35 Ibidem.
– jak ludzka pamięć lub układ pojedynczych klatek filmowych, tworzących podczas projekcji kinowej wrażenie płynności ruchu i ciągłości czasu\textsuperscript{36}.

Pozostaje zadać pytanie o to, czy pamięć w ogóle istnieje, skoro nieodłącznie związana jest z czasem i dotyczy przeszłych doświadczeń, na podstawie których próbujemy przewidzieć to, co może nastąpić w przyszłości. Jak twierdzi Dean Buonomano, autor książki \textit{Your Brain Is a Time Machine}, wielu neurobiologów i neuropsychologów zgodziłoby się co do tego, że nasze poczucie czasu jest złudzeniem i to mózg wytwarza dla nas tę iluzję. Podstawowy problem polega jednak na tym, że słowo „złudzenie” rozumiane jest inaczej przez eternalistów, którzy sugerują, że upływ czasu jest doświadczeniem subiektywnym, a nie cechą świata zewnętrznego, inaczej zaś przez przedstawicieli neuronauki. Ci drudzy akceptują twierdzenie, że czas jest konstrukcją mentalną, lecz od razu dodają, że taką, która wiarygodnie – choć w sposób niedoskonały – odzwierciedla rzeczywistość czasu. Można powiedzieć, że eternaliści nie przyjmują „ludzkiej” perspektywy, lecz patrzą na świat z punktu widzenia Doktora Manhattana, którego umysł jest zdolny do uchwycenia zależności zachodzących na poziomie czterowymiarowej areny zdarzeń.

Przeświadczenie o nierealności czasu nie jest wyłącznie atrybutem nieludzkiego bohatera serialu, ponieważ podobne doznania występują u osób, które przeżyły traumę i doświadczają nieciągłości czasu, czyli rozerwania związku między przeszłością, teraźniejszością i przyszłością, wskutek czego ich poczucie „bycia-w-czasie” ulega dezintegracji\textsuperscript{38}. Traumacyjne historie zawsze rozgrywają się poza porządkiem linearnym, a wspomnienia o nich nie tworzą zintegrowanej pamięci, dlatego w serialu wielokrotnie powraca scena masakry w Tulsie, zazwyczaj przywoływana w postaci krótkiej wstawki, która przypomina o widmowej obecności zmarłych\textsuperscript{39}. Jeśli traumatyczne przeżycia nie można umieścić w porządku chronologicznym, to opowiadanie o nim wymaga znalezienia odpowiednich narzędzi, zdolnych do uchwycenia rozbitej i pokawałkowanej tożsamości. Pamięć traumatyczna – podobnie jak

\textsuperscript{36} Metaforą nieruchomych klatek filmowych, które podczas projekcji tworzą wrażenie płynności ruchu i ciągłości czasu, posłużył się nie tylko Julian Barbour, ale również Brian Greene w książce \textit{Struktura kosmosu. Przestrzeń, czas i struktura rzeczywistości}, przel. E.L. Łokas, Prószyński i S-ka, Warszawa 2005.

\textsuperscript{37} Zob. D. Buonomano, \textit{Your Brain Is a Time Machine: The Neuroscience and the Physics of Time}, W.W. Norton & Company, New York 2017, s. 173. Żyjemy w świecie doświadczeń subiektywnych, a nasze zdolności postrzegania kolorów, słyszenia muzyki, czucia zapachów są przykładami konstrukcji mentalnych – pisze Buonomano – czyli złudzeniami, z których każde ma jednak swoje źródło w rzeczywistych zjawiskach fizycznych, jak długość fal elektromagnetycznych, fale dźwiękowe i struktura chemiczna cząsteczek.

\textsuperscript{38} Zob. M. Bush, \textit{Refractions in Time: A Minkowskian Understanding of Being Dislocated in Time}, „Existential Analysis” 2020, Vol. 31, No. 1, s. 134–135, 138.

\textsuperscript{39} W ujęciu Jacques’a Derridy obecność widm świadczy o rozbiuciu linearnego czasu, jest doświadczeniem „przeszłości jako tego, co nachodzi (à venir)”. J. Derrida, \textit{Widma Marksa}, przeł. T. Załuski, Wydawnictwo Naukowe PWN, Warszawa 2016, s. 14.
sposób percepcji świata przez Doktora Manhattana – polega na wrażeniu równoczesności zdarzeń, które w „normalnych” warunkach postrzegane byłyby jako następujące po sobie. Potwierdzają to holenderscy psychologowie, Bessel A. van der Kolk i Onno van der Hart, którzy piszą: „symultaniczność łączy się z tym, że traumatyczne doświadczenie jest w pewnym sensie bezczasowe. Nie uległo przekształceniu w historię osadzoną w czasie, posiadającą początek, środek i koniec (co jest charakterystyczną właściwością pamięci narracyjnej)”40. Przeżyta trauma sprawia, że człowiek odnosi wrażenie, że istnieje niejako poza czasem, że jego świat jest statyczny – nic się w nim nie porusza, nic się nie zmienia i „nic się nigdy nie kończy”41.

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