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Herausgegeben von
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Editorial

Die Körpergeschichte hat in den vergangenen zwanzig Jahren enorm an wissenschaftlicher Aufmerksamkeit gewonnen und eine bemerkenswerte Ausweitung erfahren. Diese Zeitschrift versucht diese Entwicklung in ihrer Facettenvielfalt abzubilden und weiter voranzutreiben. Als Online-Journal veröffentlicht sie Artikel in deutscher oder englischer Sprache, die ein beidseitig anonymisiertes Peer Review durchlaufen haben. Alle Beiträge erscheinen kostenfrei im Open Access.

Der Körper gerät dabei als ein multidimensionaler Forschungsgegenstand und das Ergebnis eines historischen Wandels in den Fokus – als ein Effekt sozialer Praktiken, ein Objekt der Imagination und Repräsentation, in seiner Diskursivität, Materialität und Produktivität. Er war und ist sowohl ein Medium der Subjektivierung als auch ein Ort gesellschaftlicher Ordnungsversuche und nicht zuletzt politischer Konflikte. In diesem umfassenden Verständnis lautet der Titel dieser Zeitschrift: Body Politics.

Die Körpergeschichte verändert dabei nicht nur unseren Blick auf Menschen und deren Körper und Geschichte – sie betrifft auch unsere Wahrnehmung von Tieren und Dingen und deren vermeintlich grundsätzliche Andersartigkeit.

Dementsprechend greift diese Zeitschrift auf ein breites Angebot von Fragestellungen und unterschiedliche Herangehensweisen zurück. Sie versammelt zudem nicht nur Artikel aus den Geschichtswissenschaften, sondern steht ebenfalls historisch interessierten Beiträgen aus den Literatur- und Medienwissenschaften sowie anderen Kultur- bzw. Sozial-wissenschaften offen.

Die Herausgebenden

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Future Bodies. A Brief Overview

Heiko Stoff & Henriette Gunkel

If you ask ChatGPT in summer 2024 about "future bodies", it will tell you that it is a concept that explores the potential evolution, enhancement, and transformation of the human body through technology, science, and cultural shifts. Future bodies are always simultaneously the product of scientific and technological possibilities and fictional imaginings or speculations. Science and practices of 'fictioning' are encountered in an inter- and transdiscursive exchange.[1] Speculation continues to precede realization, and science fiction narratives and artistic practices find their way into research, just as (bio)technological innovations are incorporated into art, film, literature, and games.[2] Since the late 19th century, future bodies have been understood in transatlantic societies as visions of physical ideals that can be planned and shaped, as well as predictions of horror, which must be prevented. Both ideas of the future are tied to the present and are products of contemporary discourses, problematizations and power relations. In this way, the imagined future makes an intervention into the present, the 'real', in order to offer alternative models of being in the world in the here and now and, by doing so, shape the futures to come.[3]

1 Gunkel, Hameed and O'Sullivan in their edited volume *Futures and Fictions* argue that fiction is an important category beyond film and literature, especially in relation to the possibility of a different political imaginary, which is reflected in the term fictioning (2017:1).

2 This has been discussed intensively, especially around the year 2000. Among others: Angerer, Marie-Luise; Peters, Kathrin; Souflis, Zoe (2002; Eds.): Future Bodies: Zur Visualisierung von Körpern in Science und Fiction. Berlin: Springer. See also Hayles, N. K. (1999): How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics. Chicago, IL: University of Chicago Press.

3 Niklas Luhmann coined the term of an imagined "present future" in contrast to unimaginable "future present". Luhmann, Niklas (1976): "The Future Cannot Begin: Temporal Structures in Modern Society". In: Social Research 43/1. 130–152. See amongst others Roßmann, Maximilian (2021): "Vision as make-believe: how narratives and models represent sociotechnical futures". In: Journal of responsible innovation, 8/1. 70-93.

What it means to be human

The question of what it means to be human is always at the centre of the debate around future bodies. In European historiography this query was intrinsically linked to ideas of development and progress in humanism and the Enlightenment, particularly in the work of Immanuel Kant.[4] However, it was precisely the technological and scientific perfection of mankind that was met with opposition even then. To this day, the basic tenets of this improvement of the human being are subject to criticism that was already formulated in the 18th century in the face of Julien Offray de La Mettrie's machine metaphors for the human body (*l'homme machine*): hubris, unnaturalness, alienation, anti-humanism.[5]

Just how controversial the issue of what it is to be human is, can be seen from George W. Bush's establishment of the US President's Council on Bioethics in 2001, which, under the leadership of the physician Leon Kass, was tasked to explore the ethical limits of biotechnological advances. In the paper *Beyond Therapy: Biotechnology and the Pursuit of Happiness,* published by the Council in 2003, four presumed objectives of biomedical projects were identified: "better children", "superior performance", "ageless bodies", and "happy souls". A distinction was made between surgical, cognitive, technological, and, finally, genetic enhancement.[6] Such diverse biomedical procedures – human genetic selection, eugenics, reproductive medicine, synthetic biology, bio-enhancement, gene editing, transplants, pharmaceuticals – are closely related to, but usually distinct from, the substitution and intensification of bodily functions through technical devices. Technical enhancements such as exoskeletons, prostheses, wearable technology, implants, avatars, brain-computer interfaces or augmented reality – all of which have been discussed as the 'cyberization of the human body' or as 'technobodies' – have intensified debates about overcoming, replacing or even realizing the human. While these can be discussed simply as medical-therapeutic achievements, the concept of human enhancement is explicitly intended to transcend boundaries that are understood as 'natural'. Men such as Nick Bostrom, Raymond Kurzweil, David Pearce, Kevin Warwick or Elon Musk have been living out fantasies

4 See f.e. Rüsen, Jörn: "Was ist der Mensch? – Die Antwort des Humanismus". In: Christoph auf der Horst (2014; Ed.): Die Welt, in der wir leben. Düsseldorf: dup. 31-46.

5 Sharon, Tamar (2013): Human nature in an age of biotechnology: The case for mediated posthumanism. Dordrecht: Springer.

6 Kass, Leon (2003): Beyond therapy: biotechnology and the pursuit of happiness. Washington, D.C: The President's Council on Bioethics.

of immortality and superintelligence since the 1990s.[7] The transhumanist project, which corresponds to the Californian dream of the dissolution of boundaries and technical control of human destiny – the 'further'-ideology of the Californian counterculture movement – appears to be a liberal-anarchist, techno-capitalist, and, above all, androcentric pipe dream.[8] While philosophical lines to both the Enlightenment and Friedrich Nietzsche are also suggested, the genealogy of such transhumanism usually refers back to British and US-American biologists and cyberneticists of the 1950s, who assembled at the Macy Conferences on Cybernetics and the CIBA Foundation Symposium "The Future of Man" in London in 1962.[9] But far more complex transnational networks of philosophical ideas, technical and medical developments, political imaginaries and cultural designs could be listed that refer to the concept of a 'New Man' in general and to future bodies in particular. We can speak of an ABC of future bodies – androids, biofacts, chimeras, designer babies, etc. – which populate the imaginations not only of science fiction literature, but also of (bio)technology developers.[10] It thereby made a certain difference whether the improvements in physical abilities were expected immediately, for example through cognitive improvements or technological enhancements, or were understood as processes projected into the future, for example through human genetic, but also socio-political, if not educational measures.

There seem to be four dominant positions associated with future bodies; these can be interpreted as 1. the result of a future technical and scientific medicine which can be used preventively and therapeutically, but also as an extension and performance enhancer, and must therefore also be discussed as 2. a fundamental ethical problem that affects basic social values and revolves around the central question of what it means to be human. In the transatlantic and East Asian debate, the focus is on 3. the transhumanist project of unlimited augmentation and enhancement of all

7 Sorgner, Stefan Lorenz (2020): On transhumanism. University Park, Pennsylvania: Penn State Press; Huberman, Jennifer (2020): Transhumanism: From ancestors to avatars. Cambridge: Cambridge University Press.

8 Barbrook, Richard; Cameron, Andy (1996): "The californian ideology". In: Science as culture, 6/1. 44-72.

9 Coenen, Christopher (2006): Der posthumanistische Technofuturismus in den Debatten über Nanotechnologie und converging technologies. Berlin: Akademische Verlagsgesellschaft; Pias, Claus: "Zeit der Kybernetik – eine Einstimmung". In: Pias, Claus (1946; Ed.): Cybernetics/Kybernetik. Die Macy-Konferenzen 1946-1953, Band 2: Essays und Dokumente. Zürich: Diaphanes. 9-41. On the importance of Friedrich Nietzsche for transhumanist thinking, see among many others Pearson, Keith Ansell (1997): Viroid life: Perspectives on Nietzsche and the transhuman condition. London: Routledge.

10 Stoff, Heiko: "Alraune, Biofakt, Cyborg. Ein körpergeschichtliches ABC des 20. und 21. Jahrhunderts". In: Simone Ehm; Silke Schicktanz (2006; Eds.): Körper als Maß?. Stuttgart: Hirzel. 35-50.

abilities, which in turn fits into neoliberal and libertarian ideas of a market and competitive society. In queer and postcolonial discourses, the options for new and diverse modes of subjectivation were ultimately emphasized. This meant 4. the post-humanist dissolution of the binary structured criteria of natural/artificial, mind/machine, male/female or human/nonhuman, was understood as a technological option to break away from androcentrism, racism, heteronormativity, and speciesism.

Although the terms are often used interchangeably, a distinction is made in the literature between transhumanism and critical posthumanism. The latter, which was initially also referred to as cyberfeminism, follows on from queer-feminist theories such as those formulated by Sadie Plant, Donna Haraway and Rosi Braidotti.[11] After a long period in which a fundamental and philosophically saturated critique of technology dominated feminism, the 1980s saw an increasing focus on the possibilities and opportunities of technological appropriation.[12] Haraway's proposition not to leave cyberization to patriarchal war research, but to use it to interfere and recode, and ultimately to abolish the binary and (hetero)normative order, was a wake-up call and established a new field of identities and interventions.

In her *Cyborg Manifesto*, Haraway explicitly referred to the repertoire of feminist science fiction literature, which had inventively spelled out options for hybrid and gender-diverse life forms, rather than to actual biotechnological research. Haraway was more concerned with narrative invention or 'alternative narratives' in relation to present and future bodily possibilities.[13] The queer-feminist combination of science, technology, art and media should itself – as the artist Jill Scott put it in the 1990s –

11 Loh, Janina (2019): Trans-und Posthumanismus. Hamburg: Junius Verlag; Hayles, How We Became Posthuman.

12 Braidotti, Rosi (2013): The posthuman. Oxford: John Wiley & Sons; Plant, Sadie: "The virtual complexity of culture". In: Bird, John et al. (1996; Eds.): Futurenatural. New York: Routledge. 215-228; Åsberg, Cecilia; Rosi Braidotti: "Feminist posthumanities: An introduction". In: Åsberg, Cecilia; Braidotti, Rosi (2018; Eds.): A feminist companion to the posthumanities. Dordrecht: Springer. 1-22; Weber, Jutta (2001): "Ironie, Erotik und Techno-Politik: Cyberfeminismus als Virus in der neuen Weltunordnung? Eine Einführung". In: Die Philosophin: Forum für feministische Theorie und Philosophie, 12/24.

13 Haraway, Donna (1985): "Manifesto for cyborgs: Science, technology, and socialist feminism in the 1980s". In: Socialist review, 80. 65; Michael, Katina, et al.: "Cyborgs and human–machine communication configurations". In: Guzman, Andrea L.; Jones, Steven; McEwen, Rhonda (2023, Eds.): The SAGE handbook of human-machine communication. London: Sage Publications Ltd. 32; Guzman, Andrea L.; Jones, Steven; McEwen, Rhonda (2023, Eds.): The SAGE handbook of human-machine communication. London: Sage Publications Ltd.; Obourn, Megan (2013): "Octavia Butler's disabled futures". In: Contemporary Literature, 54/1. 109-138.

imagine future bodies.[14] The enthusiasm that gripped not only the research community at this time, but also the cultural scene, is particularly evident in the two-volume edition of the German-language art magazine *Kunstforum* published by Florian Rötzer in 1996. This brought together almost everyone who had commented on the possibilities of biotechnological innovations in the life sciences, media studies and art. The title of the issue was indeed "Die Zukunft des Körpers" ("the future of the body").[15] An important question remains as to which similarities are involved, which qualities are mixed, which (reproductive) techniques are used and for what purpose, for example how the closeness of the human species to other animals is imagined, concretely understood or created. Pascal Eitler shows this in his contribution to this special issue.

Haraway, in an unusual correspondence with the sociologist of science Bruno Latour, emphasized the blending, the fluidity, the connections (also as overcoming the singular and the species), the hybrid, the chimera, the non-binary shifts, as expressed by the prefixes 'trans' or 'inter'. While transhumanist male fantasies are primarily about 'hyper-ability', queer ideas also negotiated the possibilities of a future 'dis-ability' in an optimistic and self-empowering sense, an acknowledgement of body positivity, diversity, difference, lack and variability.[16] In her contribution to this issue, Astrid Deuber-Mankowsky shows that it is as much about life (reproduction) as it is about death, not about their abolition, but about the in-between spaces of human existence. On the one hand, this could refer to the discursive processes that are inextricably linked to materiality, as in the area of New Materialism, but on the other hand, it could also mean the substantial shaping of the physical, its appropriation and transformation.[17] Such positioning, which increasingly united forms of posthumanism, was in turn in conflict with approaches critical of technology and science, which feared a subjugation of the phenomenologically understood '*Leib*' to technological abstractions, but also to neoliberal modes of flexible subjectivation.[18]

14 Sophia, Zoë (1992): "Virtual corporeality: A feminist view". In: Australian Feminist Studies, 7/15. 11-24.

15 Kunstforum 132; 133 (1996).

16 Lundblad, Michael (2020): "Animality/posthumanism/disability: An introduction". In: New Literary History, 51/4. v-xxi; Campagna, Diego; Sahinol, Melike (2022): "Enhancement Technologies and the Politics of Life". In: Nanoethics, 16/1. 15-20.

17 Preciado, P. B. (2013): Testo junkie sex, drugs, and biopolitics in the pharmacopornographic era. New York: The Feminist Press at the City Univ. of New York.

18 Tripathi, Arun Kumar (2015): "Postphenomenological investigations of technological experience". In: AI & SOCIETY, 30/2. 199-205; Vandenberghe, Frédéric (2004): "Posthumanism, or the cultural logic of global neo-capitalism". In: Complexitiés du posthumanisme: Pour une critique de la bio-économiquepolitique, 24/25. 55-132.

This brief and perhaps somewhat crude overview is intended to provide a framework that connects the contributions collected in this special issue. When we, a media scholar and a historian, started to conceptualize an issue for *Body Politics* in 2020 that would bring together past and present ideas about future bodies, we also wanted to provide an interim summary of these positionings since the late 20th century. To this end, we planned a workshop that would explicitly combine historical, media and cultural studies approaches to bring 'present future' and 'future present' into conversation with each other.[19] After issuing a call for proposals for such a workshop, attempts to gather in person repeatedly failed due to the necessary restrictions on physical contact imposed by the COVID-19 pandemic. In the end, we had no choice but to organise an online event in October 2021, which brought together German studies scholar Britta Herrmann, historian of science Barbara Orland, historian Pascal Eitler, media scholar Sasha Shestakova, political scientist Christopher Coenen, philosopher and media theorist Astrid Deuber-Mankowsky, media and cultural studies scholar Sarah Horn and sociologist Elina Oinas. The different specialist disciplines and research orientations represented by the participants were balanced in highly stimulating discussions. A selected overview of the contributions is presented in this special issue.

Who gets to make Future Bodies?

To think about future bodies, we first need concepts of imagined futures and of volatile corporeality, an idea of certain techniques of bodily transformation or even transgression. The future, as a singular, coherent concept, a product of secular temporalization and continuous time sequences, is necessarily predicted from present conditions, often extrapolated into an either utopian or dystopian future.[20] It can thus be planned, shaped, or prevented, but also foreseen, prophesied, and speculated on. In this respect, the future holds desirable and undesirable bodies – depending on different (bio)political aesthetic regimes – ready to either overcome current limitations, fulfil present demands, or develop into dangerous and unwanted consequences. At the same time, the imagined

19 Luhmann, Niklas (1976): "The future cannot begin: Temporal structures in modern society". In: Social Research, 43/1. 130-152.

20 Hölscher, Lucian (2016): Die Entdeckung der Zukunft. Göttingen: Wallstein Verlag; Adam, Barbara; Groves, Chris (2007): "Future matters: Action, knowledge, ethics." Future Matters. Leiden: Brill; Adam, Barbara (2010): "History of the future: Paradoxes and challenges". In: Rethinking History, 14/3. 361-378.

existence of future bodies has an impact on the present and shapes debates about human physical identity.

While future bodies may have emerged from the dreams of the Enlightenment, they are always tied to the material and productive conditions of societies. The fact that the scientific-technical concept of the body was from the outset based on mechanics and regulatory processes, made ideas and practices of physical transformation and development possible in the first place. Human physiologies were not mechanised by cybernetics in the middle of the 20th century; they had already been mechanised since the 18th century: the main model of future bodies is the automaton. As Georges Canguilhem has lucidly shown, the history of the concept of regulation in the 18th century combined the applied mechanics of machine control functions with a theological discourse on the preformed mechanism of the organism.[21] At the heart of this was the dispute about Gottfried Wilhelm Leibniz's equilibrium, the pre-stabilised harmony established by God, the idea that the world was completely regulated from the beginning. Leibniz's point of reference were the impressive automata invented by Jacques de Vaucanson in the 1730s. These were not only human replicas of a preformed mechanism, but also proved that it was possible to regulate processes without the constant intervention of a regulator or governor.[22] In his writing about the 'machine man' (*l'homme machine*) from 1748, Julien Offray de La Mettrie understood physical functions as mechanical processes that had to be technically treated accordingly. The dispute over the 'soullessness' of this 'machine man' united theological and science-critical discourses. The idea of the artificial human existed before the 19th century, but at that time it was not future-orientated, not dedicated to the idea of development and improvement.[23] It

21 Canguilhem, Georges: "La formation du concept de régulation biologique aux XVIIIe et XIXe siècles". In: Canguilhem, Georges (1977): Idéologie et rationalité dans l'histoire des sciences de es sciences de la vie. Paris: Vrin. 81-99. See also Agiriano, Arantza Etxeberria: "Regulation, milieu, and norms: Georges Canguilhem's individual organisms as relations". In: Méthot, Pierre-Olivier (2020; Ed.): Vital Norms: Canguilhem's The Normal and the Pathological in the Twenty-First Century. Paris: Hermann. 295-332.

22 Canguilhem, Georges: "Die Herausbildung des Konzeptes der biologischen Regulation im 18. und 19. Jahrhundert". In: Canguilhem, Georges (1997): Wissenschaftsgeschichte und Epistemologie. Gesammelte Aufsätze. Frankfurt a. M.: Suhrkamp. 91f; Westermann, Bianca: "Vom Flötenspieler zum Hochleistungssprinter–Kulturelle Austauschprozesse zwischen Körper-und Maschinenphantasien". In: Leistert, Oliver; Bierwirth, Maik; Wieser, Renate (2010; Eds.): Ungeplante Strukturen. Leiden: Brill Fink. 111-131; Jones-Imhotep, Edward (2020): "The ghost factories: histories of automata and artificial life". In: History and Technology, 36/1. 3-29.

23 Campbell, Mary Baine (2010): "Artificial men: Alchemy, transubstantiation, and the homunculus". In: Republics of Letters: A Journal for the Study of Knowledge, Politics, and the Arts, 1/2. 4-15.

was only with the revolutionary practices of the late 18th century and the evolutionary concepts of the 19th century that the link between mechanics and organisms took on a futuristic dynamic.[24]

Human improvement and bodily perfection were inextricably linked as aspects of development, education and the revolution itself, which was intended to have rejuvenating effects. A central slogan of the French Revolution was that "regenerated" man would not "degenerate".[25] (R)Evolutionary thinking established the right to have a future body, that is, to live with(in) one's body, to live one's corporeal reality, or to live in a transformed body, a new body, which corresponds to the right to identity and health, happiness and perfection. In fantastic novels of the 19th century such as Edward Bulwer-Lytton's *The Coming Race* (1871), the future was already populated by physically perfected human beings. This also affected the equalization of the strengths of men and women.[26] The revolutionary formation of new people in a new society then also guided the revolutionary projects of the 19th and 20th centuries. In the 1920s, Leo Trotsky proclaimed that this 'new man' – which in Soviet discourse was characterised as proletarian, but which was always also about the universalisation of perfected humanity – would have completely different physical features.[27] But the Enlightenment idea of progressive human development was in tension with the elaborately explained otherness of human beings and their variability – an experience of colonialism and outlined, for example, by Johann Friedrich Blumenbach – which was seen as threatening and gave rise to racism and the comparative and discriminating sciences of anthropology as well as ethnology.[28] The biological order of species and 'races' also had such a guiding and violent effect because its statics always seemed in danger of 'degeneration' and the dynamics of hybridity appeared so powerful. In 19th century evolutionism, the human being was the protagonist of a natural history that functioned according to the laws of nature, with a lineage and development linked by the mechanism of heredity, embodying both hope and anxiety, the potential for selective higher development and the all-too-frequent stated 'contraselective degeneration'. In the discursive field of tension between genetic access and environmental improvement, various eugenic projects produced

24 Walsh, Denis M. (2015): Organisms, agency, and evolution. Cambridge: Cambridge University Press.

25 Ozouf, Mona (1989): L'homme régénéré: essais sur la Révolution française. Paris: Gallimard.

26 Bulwer-Lytton, E. (1871): The coming race. Edinburgh: William Blackwood & Sons.

27 Saage, Richard (2006): "Socio-political Utopianism and the Demands of the 21st Century" In: Spaces of Utopia: An Electronic Journal, 2. 150-164.

28 Rupke, Nicolaas, and Gerhard Lauer (2018; Eds.): Johann Friedrich Blumenbach: race and natural history, 1750–1850. New York: Routledge.

the utopia of a perfect future whose inhabitants would be a new human being. The eugenics programmes of the late 19th century combined purifying selection with the development or breeding of specific characteristics or qualities. In this field, racial cleansing was just as conceivable as the future happiness of a society freed from disease, hatred and vileness.[29]

By linking the history of future bodies to a causal chain that combines biotechnology and enlightenment to form a developmental dynamic, those bodies are also excluded that are located outside this geographically well-defined space, namely the transatlantic realm, and that are also understood, even needed, as the Other of the perfecting development of human enhancement. The fact that the transatlantic body – cis-male, white, heteronormative – has been designed by comparison with the rejected female and racialized bodies, as well as with those who have eluded this binary order, is now very well researched.[30] But alternative narratives are also part of the modern project of disciplined and regulated human beings capable of development. In the transatlantic discourse itself, there was a tension between white supremacy and segregation and ideas of mixing, which were nevertheless difficult to separate from the idea of universalised whiteness. This included 'assimilation', the idea of the 'good savage' or even notions of 'miscegenation', as Thomas Jefferson, not only president of the United States of America but also a slave owner, put it to the Mohican scholar Hendrick Aupaumut in 1808: "(…) we shall all be Americans, you will mix with us by marriage, your blood will run in our veins, & will spread with us over this great island."[31] En passant, however, this also expressed what was to become a leitmotif of the 19th century: the new body to be created had to be a national one! New nations produced future bodies. This undoubtedly required adaptation to modern norms. The means to this end were not only institutional, linguistic and

29 Amongst many others Hasian, Marouf Arif (1996): The rhetoric of eugenics in Anglo-American thought. Athens: University of Georgia Press; Richards, Martin: "Future bodies: some history and future prospects for human genetic selection". In: Bainham, Andrew; Sclater, Shelley D.; Richards, Martin (2002; Eds.): Body Lore and Laws. Oxford-Portland: Hart Publishing. 289-307.

30 Vartija, Devin J. (2021): The color of equality: race and common humanity in enlightenment thought. Philadelphia: University of Pennsylvania Press; Farr, Arnold: "Whiteness visible: Enlightenment racism and the structure of racialized consciousness". In: Yancy, George (2004; Ed.): What white looks like. New York: Routledge. 159-174. This is also the reason why Paul Gilroy's "Black Atlantic" (1993) was such an important book.

31 Malcomson, Scott (2000): One drop of blood: The American misadventure of race. New York: Farrar, Straus and Giroux. 62.

cultural homogenization, but above all demographic policy.[32] Three possibilities were postulated in this teleological development discourse: that everyone should become white, that everyone should remain different but be considered equal, and that everyone should remain different but be unequal. In terms of population policy, this meant either mixing or segregation. As the Jewish body did not seem to fit into this order, since it seemed to combine mixing and segregation, it had to be persecuted all the more mercilessly, unmasked and ultimately destroyed according to anti-Semitic logic, in particular in the German context.[33] An important post-humanist idea to move beyond this formative discourse of the 19th century is in this sense that a movement towards blackness must be inherent in the process of becoming human.[34]

The ideal body, which in late 19th century Germany was shaped according to ancient models of beauty, was at the centre of new national creations. Medicine, public health, and physical culture worked on concepts to make this corporeality understandable, manageable and changeable. Central concepts were those of strengthening, cleansing, and purification.[35] These, in turn, were gained by comparison with those rejected or abjected bodies – the hybrid, the chimera – that were understood to be outside the national creation of the body. It is therefore of particular interest that the physiological experimental systems which, since the last third of the 19th century, have reorganised the notion of the corporeal as an inner milieu regulated and controlled by specific agents, were explicitly based on the experimental production of malformations or 'monstrosities', on experimental teratology.[36] Medicine and the life sciences appropriated the bodies and body parts of those vulnerable people who had fewer rights and who therefore appeared to be available for research. In Germany, the medical-ethical debate on informed consent began around 1900 with the experiments on underage females selling their bodies for

32 Tröhler, Daniel (2017): "Shaping the national body: Physical education and the transformation of German nationalism in the long nineteenth century". In: Nordic Journal of Educational History, 4/2. 31-45.

33 Gilman, Sander (1991): The Jew's Body. New York: Routledge.

34 Jackson, Zakiyyah Iman (2020): Becoming human: Matter and meaning in an antiblack world. New York: New York University Press.

35 Möhring, Maren (2004): Marmorleiber. Körperbildung in der deutschen Nacktkultur (1890-1930). Köln: Böhlau Verlag.

36 Sharpe, Christina (2010): Monstrous Intimacies: making post-slavery subjects. Durham: Duke University Press; Malatino, Hilary (2019): Queer Embodiment: Monstrosity, Medical Violence, and Intersex Experience. Lincoln: University of Nebraska Press; Halberstam, Jack (1995): Skin Shows: Gothic Horror and the Technology of Monsters. Durham: Duke University Press.

sex carried out by the highly respected dermatologist Albert Neisser.[37] In the USA, the long life of Henrietta Lacks' cells (or HeLa cells) up until today is evidence of the (ongoing) dehumanization.[38]

This body politics culminated in the lethal human experiments that combined objectification and the 'völkisch'-selective order, and in the industrial practice of extermination under National Socialism.[39] For the political movements of the 1950s and 60s – anti-colonial liberation movements as well as the women's and gay and lesbian movements – the exclusion of their bodies from future history could be experienced, felt, increasingly analysed and rewritten. In the second half of the 20th century, the right of the excluded to their past, present and future became a central political demand. This included to finally speak for oneself, discarding or subversively appropriating the names that had been created in the transatlantic discourse, and reinventing oneself. After all, this was a key aspect of Frantz Fanon's writings.[40] Afrofuturist imageries and narratives, in turn, amplify the experience of alienation and race as technology and reconceptualize the history of slavery in a futuristic scenario. The science fiction stories of black writers from Samuel R. Delany and Octavia Butler to Nnedi Okorafor (who prefers the term Africanfuturism) are all about bodily transformations and technological enhancement that elude the biotechnological master narratives. The theme of space travel, of being an alien or as Lee Scratch Perry puts it, a visitor on Earth, suggests that the terrestrial space for future bodies has already been occupied by the biopolitical discourse of transatlantic science and politics.[41]

37 Sabisch, Katja (2007): Das Weib als Versuchsperson: Medizinische Menschenexperimente im 19. Jahrhundert am Beispiel der Syphilisforschung. Bielefeld: transcript Verlag.

38 Mojisola Adebayo's play Family Tree (2023) turns to the history of Henrietta Lacks and brings it together with other, less attended medical narratives. See also Skloot, Rebecca (2010): The Immortal Life of Henrietta Lacks. New York: Crown Publishers.

39 Still an important analysis: Mosse, George L. (1964): The crisis of German ideology: Intellectual origins of the 3 Reich. New York: Grosset & Dunlap.

40 Agathangelou, Anna M. (2016): "Fanon on decolonization and revolution: Bodies and dialectics". In: Globalizations, 13/1. 110-128.

41 Henriette Gunkel and kara lynch (2019, Ed.): We Travel the Space Ways. Black Imagination, Fragments, and Diffractions. Bielefeld: transcript; Barber, Tiffany E., et al. (2015): Afrofuturism 2.0: The rise of astro-blackness. London: Lexington Books; Rollefson, J. Griffith (2008): "The 'Robot Voodoo Power' Thesis: Afrofuturism and Anti-Anti-Essentialism from Sun Ra to Kool Keith". In: Black Music Research Journal, 28/1. 83-109.

To Produce New Bodies

The futuristic production of human beings requires mechanics and dynamics, a scientific-technical concept of the body and the idea of development: biotechnology and (r)evolution. That bodies cannot only be described but also transformed or even created, that they are plastic, has been experimentally established since the last third of the 19th century. Claude Bernard's *Introduction à l'étude de la médicine expérimentale* of 1865 referred to the practical shaping of phenomena.[42] The molecular biologist and historian of science François Jacob called it "une science active", "où l'expérimentateur intervient directement, prélève un organe, le fait fonctionner, change les conditions, analyse les variables".[43] At the end of the 19th century, it was the embryological formulation of 'Entwicklungsmechanik" ('developmental mechanics') under the influence of Ernst Haeckel that demanded the successful disassembly and reassembly of organic parts as an experimental technique in animal experiments. In this context, physiologists, zoologists and biologists established a pioneering link between biology and technology, between biological and mechanical systems. If the development of living organisms can be described as a mechanical process, then it must also be possible to establish what the physiologist Jacques Loeb called "Technik der lebenden Wesen".[44] This 'biotechnology' established two fundamental principles: living organisms can be described as causal, mechanical processes, and they can be arbitrarily and purposefully altered by experimental intervention in these processes.[45] In short, physiology also became an art of engineering. The developmental physiology of the last third of the 19th century formulated a corresponding experimental programme, combining design and effect as an exact causal research method. The technically modelled body, the human machine, functions economically, and the economy, the regulated body of society, is based on medical concepts. Importantly, these are not mere discourses, but models with a strong application orientation. Since then, the animal body has not only been explained in terms of the

42 Claude Bernard (1865): Introduction à l'étude de la médecine expérimentale. Paris: Éditions Garnier.

43 Jacob François (1970): La Logique du vivant. Une histoire de l'hérédité. Paris: Editions Gallimard. 199; Latour, Bruno: "The Costly, Ghastly Kitchen". In: Cunningham, Andrew; Williams, Perry (1992; Eds.): The laboratory revolution in medicine. Cambridge: Cambridge University Press. 299.

44 Pauly, Philip J. (1994): Controlling life. Jacques Loeb and the engineering ideal in biology. New York, Oxford: Oxford University Press.

45 Bud, Robert (1994): The uses of life: a history of biotechnology. Cambridge: Cambridge University Press; Fangerau, Heiner (2014): Spinning the scientific web: Jacques Loeb (1859-1924) und sein Programm einer internationalen biomedizinischen Grundlagenforschung. Berlin: Walter de Gruyter.

binary key concepts of deficiency and performance – without which for example hormone research would have been unthinkable – but have also been made specifically functional, adaptable and augmentable in corresponding experimental systems.[46]

In experimental practice, it was the variations and deformities that first allowed conclusions to be drawn about the factors interpreted as 'normal'. According to the anatomist and biologist Wilhelm Roux, this also made it possible to tackle the goal of developmental mechanics, namely "die Bildung der Lebewesen experimentell nach unserem Willen zu leiten."[47] The physiologist Eugen Steinach conducted experiments at the Biological Experimental Station in Vienna, known as the Vivarium, in which he claimed to be able to produce effects of feminisation, masculinisation or hermaphroditisation in rodents by transplanting ovaries and testicles. As these were based on the hormonal effects of an internal secretion, Steinach had a decisive influence on endocrinological research into sex development. If the option of surgical or hormone-therapeutic normalisation of sex always existed, an experiment could also, as the sexual reformer Magnus Hirschfeld interpreted it, be proof of a sex-gender continuum that dissolved into sexual intermediate stages. Steinach, however, became world famous above all for his hormonal rejuvenation experiments, which fit into the new social order of youthfulness and flexibility.[48] The futuristic combination of technology, biology and chemistry in the process – held together by the concepts of development and regulation – was impressively demonstrated by the Czech writer Karel Čapek. The 'robots' he invented in his play *R.U.R.* as mechanical as they appeared, were based on a biochemical functional system of enzymes and hormones.[49] As Louis Chude-Sokei has pointed out, Čapek's portrayal of the robot revolt "grew directly out of the 19th-century anxieties about slave reprisals, fears of colonial resistance, and 19th- and 20th century terror of labor insurrections". Chude-Sokei argues that the primary way to understand robots is through the lens of race, gender, labor, and immigration,

46 Stoff, Heiko (2012): Wirkstoffe. Eine Wissenschaftsgeschichte der Hormone, Vitamine und Enzyme, 1920-1970. Stuttgart: Steiner.

47 To experimentally guide the formation of living beings according to our will. Wilhelm Roux (1918): „Ankündigung." In: Archiv für Entwicklungsmechanik der Organismen, 44/1. 1-4, here 1-2.

48 Stoff, Heiko (2004): Ewige Jugend. Konzepte der Verjüngung vom späten 19. Jahrhundert bis ins Dritte Reich. Köln/Weimar: Böhlau; Sengoopta, Chandak (2006): The Most Secret Quintessence of Life: Sex, Glands, and Hormones, 1850-1950. Chicago: University of Chicago Press; Walch, Sonja (2016): Triebe, Reize und Signale: Eugen Steinachs Physiologie der Sexualhormone. Vom biologischen Konzept zum Pharmapräparat, 1894-1938. Wien: Böhlau Verlag.

49 Čapek, Karel; Jitka Čejková (Ed.) (2024): R.U.R. and the Vision of Artificial Life. Cambridge: MIT Press.

emphasizing the connection between machines and slaves that has been also instrumental in Afrofuturism: "that very drive to manufacturing a future, one that depends on bodies and labor while promising escape from bodies and labor, ensnares technology in the problems of our past, and is why metaphors of race, sex and *reproduction* entangle us in the material problems of imagining and inventing a future".[50] This can also be said of the concept of the Japanese robot, which has been developed since the 1920s and is based on ideas of nation, gender, family structures and labour.[51]

The early 20th century, when the plasticity of the body became a significant aspect of developmental physiology research, can therefore also be seen as the first main phase in the production of future bodies. Expectations of the future and moral panics created a field of tension that still exists today, especially in transatlantic societies. A key point of contention was whether bodies should be 'artificial' or 'natural'. The programme of research on animals in the laboratory – the arbitrary modification and transformation of bodies and sexes – was in a certain opposition to the body techniques of proper nutrition, body culture and systematic exercise, which were at the same time described as 'natural'. Biotechnological procedures – at the Vivarium, Walter Finkler attempted to transplant insect heads; in the Soviet Union, Sergei S. Bryukhonenko connected a severed dog's head to a kind of heart-lung machine in the 1920s – were among the major surgical and physiological promises of the 20th century, and yet they were associated not only with the transgression of ethical principles, but also with the presumption of being able to create life itself.[52]

The arbitrary design of living beings, the experimental compulsion to create something new and to make it appear, which then takes on a life of its own, creates a possibility of the monstrous that combines science and horror, fact and fiction.[53] From the very beginning, the history of biotechnology has found a commentary in the genre of the horror story. The fact that the production of new bodies is associated with terror was, of course,

50 Chude-Sokei, Louis: "Race and Robotics". In: Heffernan, T. (2019; Eds.): Cyborg Futures. Social and Cultural Studies of Robots and AI. New York: Palgrave Macmillan. 159-171; Chude-Sokei, Louis (2019): "Machines and the Ethics of Miscegenation". In: Glass Bead. Site 2. Dark Room: Somatic Reason And Synthetic Eros.

51 Robertson, Jennifer (2018): Robo sapiens japanicus: robots, gender, family, and the Japanese nation. Oakland: University of California Press.

52 Krementsov, Nikolai (2009): "Off with your heads: Isolated organs in early Soviet science and fiction". In: Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences 40/2. 87-100.

53 Stoff, Heiko: „'I dub thee vampiris'. Zur kurzen Form der wissenschaftlichen Erklärung im Horrorfilm der 1950er Jahre". In: Mayer, Ruth; Gamper, Michael (2017, Eds.): Kurz & knapp: Erzählen und Wissen in kurzen Formen. Bielefeld: transcript. 269-288.

formulated by no one more precisely than by Mary Shelley in her novel *Frankenstein or the Modern Prometheus* (1818). The book testifies to a long history of future bodies, combining scientific techniques, bodily practices, dreams and fiction(ing)s. Even though the Ingolstadt doctor's experiment failed because he did not want to take responsibility for his creation, this monster story nevertheless points to the practical possibilities of moving from the human to the post-human. But the narrative that future bodies are the product of 'mad scientists' was not so much Mary Shelley's Frankenstein motif; it was established mainly in the first half of the 20th century and then manifested in the horror films of the 1950s.[54] At the beginning of the 20th century, the experimental and substitutive approach to the living body was just as much a promise of improving the deficient human being as it was a source of disturbing speculations about the production of horror figures. In the 20th century, the experimental approach to life in general and to humans in particular is most often told in a utopian-dystopian interplay. Will there be new people in the future who are eternally young, if not immortal, who do not have to worry about diseases and who are endowed with hitherto unknown psycho-physical powers? Or will monstrosities be created as the horrific results of experiments gone wrong or malicious experiments, as desecrated, technically modified creatures alienated from humanity? This speculative and urgent discourse determines the demarcation between natural and artificial humans, which is itself a historical event.[55]

The Present Futures of Bodies

The history of the biomedical and biotechnological creation of new bodies has been described and analysed in detail.[56] Since the second half of the 20th century, it could be summarised as follows: the future of bodies is far more than an experimental exception or a fictional promise, but a possibility of life in those infrastructures that guarantee a relatively long

54 Haynes, Roslynn D. (1994): From Faust to Strangelove. Representations of the Scientist in Western Literature. Baltimore; Maryland: Johns Hopkins University Press; Skal, David J. (1998): Screams of Reason: Mad Science and Modern Culture. New York: W.W. Norton & Company; Frayling, Christopher (2013): Mad, Bad and Dangerous? The Scientist and the Cinema. London: Reaktion books.

55 Hasselmann, Kristiane; Schmidt, Sandra; Zumbusch, Cornelia (2004; Eds.): Utopische Körper. Visionen künftiger Körper in Geschichte, Kunst und Gesellschaft. München: Fink; Riskin, Jessica (2003): "The defecating duck, or, the ambiguous origins of artificial life". In: Critical inquiry 29/4. 599-633.

56 See for an overview f.e. Clarke, Adele E. et al. (2003): "Biomedicalization: Technoscientific transformations of health, illness, and US biomedicine". In: American sociological review, 68/2. 161-194.

lifespan. Conversely, this means that some people and entire communities are not included in certain future scenarios or are envisaged to have no future at all.[57] This future is shaped by everything that is excluded. This can involve undesirable practices such as smoking, alcohol or sugar consumption, as well as undesirable characteristics such as loss of control and lack of drive. However, if the aim of shaping the future is not to overcome its own foundations, then it is to perpetuate current conditions in the interests of those who benefit most from them. The future can be produced and consumed depending on the respective social formation. It is oriented in a specific way through its mode of production in mostly transatlantic discourses and practices. This also means that this future can only be understood as an extended reflection of today's economic order and power relations. Kodwo Eshun calls this a "future industry that dreams of the prediction and control of tomorrow". Mark Fisher, on the other hand, spoke of "SF capital", sarcastically emphasising how it induces "auto-zombification in the master class". Future bodies will take the form of commodities, or they will not exist.[58]

Since the late 19th century, utopian-dystopian conceptions of the evolutionary creation of future bodies through breeding and eugenics, but also through surgery and hormonal experimentation, have combined political fantasies, media narratives and experimental practices.[59] It required fictions of the factual, science fiction. Such dreams of human perfection were fuelled by fears of undesirable developments: a regression into the past as 'atavism', or a development in the wrong direction as 'degeneration'. This, in turn, was countered by the body culture and lifestyle reform movements that (re)introduced self-technologies of human perfection into transatlantic societies. While technologies of the self were part of the biopolitical project of the early 20th century in Europe, they were also linked to emerging consumer societies. Working on oneself, as well as hormone therapies and cosmetic surgery, promised the preservation of youthfulness and performance, in short, fitness, but always also referred to the possibility of transcending the limits of what it means to

57 Gunkel, Henriette (2019): "Alienation and Queer Discontent". In: Gunkel, lynch (2019, Ed.): We Travel the Space Ways. Black Imagination, Fragments, and Diffractions. Bielefeld: transcript. 387-404.

58 Eshun, Kodwo (2003): "Further considerations on Afrofuturism". In: The New Centennial Review, 3/2. 287–302, here 291; Dubey, Madhu: "Afrofuturism and the Speculative Turn". In: Goyal, Yogita (2023; Ed.): The Cambridge Companion to Contemporary African American Literature. Cambridge: Cambridge University Press. 81-95.

59 Linett, Maren (2023): "Making Us New: From Eugenics to Transhumanism in Modernist Culture". In: Modernism/modernity, 30/1. 177-200.

be human.[60] Past and present ideas and practices of future bodies both explicated and challenged notions of race, class, sex/gender, as well as certain qualities of modernity such as self-control, rationality, strength, efficiency, and beauty.

Following (and in fact centering) Michel Foucault, numerous historical studies have shown that working on oneself – technologies of the self – is a central mode of subjectivation at the turn of the millennium.[61] While the possibility of increasing physical abilities has reached certain limits, it is the technological expansions and interfaces that give rise to the expectation of options for overcoming and at the same time dissolving human boundaries. Connecting the inner system to technological devices as in human-computer or human-machine interaction requires equally customised knowledge.[62] This gives rise to fundamental questions, the practical answers to which will have serious consequences: Whether it is a matter of supporting or improving interventions, there is a fluid transition between therapy and performance enhancement. Immortality emerges as a recurring reference point.[63] As Christopher Coenen points out in the conversation with us in this issue, whether this can lead to human life – the deficient human being, "das Mängelwesen" (Arnold Gehlen) – being understood as fundamentally disabled if it has not been subjected to all the procedures of augmentation, or whether dis-ability can be understood as a possible future way of life that rather accepts the limits of life's possibilities, may become an important question in the debate about future bodies.[64] But there is not much doubt that the combination of a cybernetically understood organism with cybernetic technology will become the norm. Whether this will take the form of algorithmic conditioning, systematic adaptation or self-determined, perhaps even artistic design, remains to be seen. At best, non-technical physicality may take the form of conscious resistance and refusal.[65] The hybridization of

60 Martschukat, Jürgen (2021): The age of fitness: How the body came to symbolize success and achievement. Oxford: John Wiley & Sons.

61 See amongst others Maasen, Sabine et al. (2011; Eds): Das beratene Selbst: Zur Genealogie der Therapeutisierung in den 'langen' Siebzigern. Bielefeld: transcript Verlag.

62 Grunwald, Armin (2021): Living technology: philosophy and ethics at the crossroads between life and technology. New York: Jenny Stanford Publishing.

63 Botelho, Teresa: "Remaking ourselves: Age, death and techno-bodies in the fiction of transhumanist immortality". In: Oró-Piqueras, Maricel; Falcus, Sarah (2023, Eds.): Age and Ageing in Contemporary Speculative and Science Fiction. London: Bloomsbury Publishing. 9; Hurtado Hurtado, Joshua (2023): "Exploited in immortality: techno-capitalism and immortality imaginaries in the twenty-first century". In: Mortality. 1-18.

64 Murray, Stuart Fletcher (2023): Disability and the posthuman: Bodies, technology, and cultural futures. Liverpool: Liverpool University Press.

65 Fortunati, Leopoldina: "Real people, artificial bodies". In: Fortunati, Leopoldina; Katz, James E.; Riccini, Raimonda (2003; Eds.): Mediating the Human Body. New York:

technological artefacts with biological matter has been at the centre of the debate about cyborgs and the biotechnological transformation of humans over the last three decades. Whether future bodies will uncannily resemble automata and robots, whether androids and gynoids will be eerily similar to (gendered) humans, is the subject of intense debate in the relevant fields of technology development.[66] At the beginning of the 1930s, the philosopher Karl Jaspers astutely analysed that this also created a compulsion to be young in modern performance and consumer societies: "Jugend als das Dasein der höchsten vitalen Leistungsfähigkeit und des erotischen Lebensjubels ist der erwünschte Typus des Lebens überhaupt. Wo der Mensch nur als Funktion gilt, muß er jung sein; wenn er es nicht mehr ist, wird er den Schein der Jugend herstellen."[67]

Today, these ideas are an integral part of science fiction, films, games, popular magazines, social media, and advertising. The current debate circulates between liberal capitalist planning and critical self-invention, adaptation and enhancement, technological feasibility and ethical concerns, trans- and posthumanism, dystopian fears and utopian euphoria, and finally the interplay between materialization and performance. However, the media focus on spectacular transhumanist ideas obscures the everyday practices of assisted reproductive technologies and liberal-individualist bio-economies that are literally transforming societies.[68] Even if the central transhumanist goals are likely to remain a fantasy for the time being, other aspects of future bodies are already being realised in thoroughly pragmatic ways: reproductive technologies, synthetic biology, reassignment surgeries, and body modifications. Sex/gender self-determination in particular has become a highly meaningful form of bodily self-design. It is an important insight that research itself, in the process of knowledge production – Elina Oinas and Katriina Huttunen show this in this special issue – (statistically) constitutes and needs future bodies.

We can only speculate on what future bodies will look like. We simply do not have access to the 'future present'; in the end, we are left with

Routledge. 81-92; Farnell, Ross (1999): "In Dialogue with 'Posthuman' Bodies: Interview with Stelarc". In: Body & Society 5/2-3. 129-147.

66 Fukuda, Toshio, et al. (2001): "How far away is 'artificial man'". In: IEEE Robotics & Automation Magazine, 8/1. 66-73.

67 Youth as the existence of the highest vital performance and the erotic exultation of life is the desired type of life in general. Where man is only a function, he must be young; when he is no longer young, he will produce the appearance of youth. Jaspers, Karl (1931): Die geistige Situation der Zeit. Berlin: Göschen. 46-47.

68 Schurr, Carolin (2017): "From biopolitics to bioeconomies: The ART of (re-) producing white futures in Mexico's surrogacy market". In: Environment and Planning D: Society and Space, 35/2. 241-262.

'retro futurism'. The results could be as sobering, if not ridiculous, as the visions of the future envisioned in 1900. Far more important is the question of who will be involved in creating new bodies. Will it be the state authority, or will private companies produce the body of the future? In Japan, the government is currently providing substantial financial support for research and development in this area through the Moonshot programme, whose first goal is "to overcome limitations of body, brain, space and time".[69] These issues are still at the heart of the debate on artificial intelligence and biotechnological productivity. How will the possibilities of molecular biology, such as the CRISPR/Cas gene scissors, be used? Who will pay for this research, who has an interest in it? What is the real role of some outrageously rich men in the development of the future? While we consider these questions to be crucial, we also want to put attention to counter-narratives and (grassroots) activism that attend to acts of future bodies, to a revisionary engagement, fights for the right to a liveable future, maybe even a future at all, a future beyond all binaries, threats, systematic forces of oppression. So it is always also about designs for alternative future bodies, even if the future industry appropriates and simultaneously counteracts this with all its resources.[70] This particularly means that the biotechnological causality taken for granted in the transatlantic discourse, the orientation towards a very male, very white, very heteronormative and very wealthy 'success model' is called into question.

Future bodies are part of biopolitics, but this is entangled with thanatopolitics.[71] It is not even clear whether there is a future for certain or all living bodies, or whether there is no future at all. Death and decomposition remain the future of all bodies. And it seems obscene to think about the futures of bodies when so many people cannot even have a present, are not allowed to live, are killed and violated. In her contribution, Sarah Horn deals exactly with the question of the future presence of living bodies materialized by technical means, which seems much more precise than any transhumanist speculation. Dichotomies produce a logic of 'either or' instead of 'and', of differences and demarcations instead of similarities, connections, and entanglements. We tend to dissolve these boundaries, to find new names for complexities, to understand that a future shouldn't be built on dichotomies or competitive and exploitative

69 Council of Science, Technology and Innovation (2024): „Moonshoot Research and Development Program". In: Cabinet Office, Government of Japan. https://www8.cao.go.jp/cstp/english/moonshot/top.html (17.09.2024).

70 Fernandes, Sanjay (2011): "Detroit Techno: (A)history of Counter-Futures". AntiTHESIS, 21.

71 Prozorov, Sergei (2013): "Powers of life and death: Biopolitics beyond Foucault". In: Alternatives, 38/3. 191-193.

relations, but on multiplicities and working on the conditions of a good life for all.

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Sie besamt: Über das Geheimnis des Lebens in Claire Denis' Science-Fiction-Film *High Life* (2018)[1]

Astrid Deuber-Mankowsky

English Abstract: As I will show in the following, High Life can be read as a complex philosophical commentary on the entanglement of sexuality, gender, reproduction, and the historicity of life under the current conditions of science and technology. High Life exposes the gendered and racially differentiated violence of thanatopolitics inherent in biopolitics, and shows the ways in which the death drive can become a resistant moment that opposes the current conflation of reproductive technology and thanatopolitics. With Gilles Deleuze, I will show that, in High Life, the secret of life is not revealed from the perspective of "individual life" but from the perspective of "between moments" of a "life that is impersonal and yet singular" (Deleuze 1997, 5). Indeed, despite the omnipresence of death, the question that High Life poses concerns not death itself, but the in-between of death and individual survival.

Da ist zunächst ein sich langsam verändernder, eindringlicher elektronischer Sound. Ein feuchter grüner Garten erscheint aus dem schwarzen Bildschirm. Die Kamera bewegt sich langsam über grüne Pflanzen, dunkelgrünes Moos, reife Kürbisse und durch einen nassen Nebel, während wir weiter dem Klang zuhören. Die Szene erinnert an Paradiesisches, Fruchtbarkeit, vielleicht evoziert sie gar den Anfang allen Lebens. Zugleich erinnert sie an den Beginn von Andrei Tarkowskis klassischem Science-Fiction-Film Solaris von 1972. Plötzlich gleitet die Kamera über einen schmutzigen Herrenschuh, der aus dem Boden ragt. Es ist keine Zeit, dem Rätsel nachzuforschen. Die nächste Szene wird durch die Erscheinung einer durchsichtigen Tür eingeleitet, die den Garten von einem Außen trennt. Das klagende Weinen eines kleinen Kindes tritt an die Stelle der elektronischen Klänge. Eine männliche Stimme beruhigt das Kind, während die Kamera, ihren Blick von der nach unten führenden Leiter lösend, sich in eine subjektive Einstellung begibt, wie in einem Horrorfilm, durch einen spärlich beleuchtenden Korridor, um endlich das Kleinkind zu finden, das allein in einem improvisierten Laufstall sitzt, nun ruhig vor sich herplappernd. Der Laufstall wirkt wie ein Gleichnis für die Enge der Umgebung, die einem Gefängnis ähnelt. Wir sehen weißen Text, der über schwarze Bildschirme läuft, und farbige Lichter. Wir sind offenkundig in einem Raumschiff.

1 Aus dem Englischen übersetzt von Arnd Wedemeyer.

Das kleine Kind spielt und plappert, die männliche Stimme antwortet sanft: »Dadada.« Woher kommt die Stimme? Sie kommt aus einem anderen Draußen, aus dem Weltraum, der sich im Laufe des Films als ein anderes Drinnen entpuppen wird. Wir sehen einen jungen Mann in einem Raumanzug und Glashelm, von Robert Pattinson gespielt, der mit dem Kleinkind auf telekommunikativem Wege spricht. Seine Stimme, die aus dem schwarzen Weltraum kommt, füllt den gesamten kleinen Raum aus, in dem das Kind in seinem Laufstall vor den Bildschirmen mit dem laufenden weißen Text spielt und plappert. Der Mann – sein Name ist, wie wir später erfahren werden, Monte – hält einen Spanner in seiner Hand und zieht eine Schraube fest. Er bewegt sich langsam, in Abwesenheit der Schwerkraft, wie in einem Traum.

Was für ein Science-Fiction-Film ist *High Life*, so sorgfältig komponiert und auf so elaborierte Weise mit dem Unterschied von Sichtbarem und Sagbarem operierend, mit Klängen und bewegten Bildern spielend? Wie verursacht und zersetzt er Affekte? Wie kann er, mit einer solchen Virtuosität, das Leben aufs Spiel setzen, mit dem Trieb nach dem Tod spielen und eine so radikale Kritik der gegenwärtigen Thanatopolitik fomulieren?

Wie ich im Folgenden zeigen werde, stellt *High Life* einen komplexen Kommentar dar zu der Verschränkung von Sexualität, Geschlecht, Reproduktion, Technik und Todestrieb. Der Film enthüllt einerseits die geschlechtlich und rassistisch bestimmte Gewalt der in jeder Biopolitik enthaltenen Thanatopolitik. Er zeigt andererseits aber auch, dass der Todestrieb zum widerständigen Moment werden kann, indem er sich der Ineinssetzung von Reproduktionstechniken und Thanatopolitik widersetzt. Tatsächlich fragt, bei aller Omnipräsenz des Todes, *High Life* nicht nach dem Tod selbst, sondern nach dem Zwischenraum zwischen Tod und individuellem Überleben. Dabei spielt das Beharren auf den materiellen und körperlichen Bedingungen der Reproduktion und die Nähe zwischen Kamera und Körper eine zentrale Rolle.

1. Keine Odyssee im Weltraum

Zwei dünne, lange Schläuche verbinden Monte mit dem Shuttle – wie Nabelschnüre. Er hört auch während der Arbeit nicht auf, mit dem Kind zu reden. In Schuss und Gegenschuss sehen wir Monte in seinem Raumanzug im Medium-Shot und in Naheinstellungen das Shuttle von außen reparieren und mit dem Kleinkind sprechen, ohne es zu sehen. Wir sehen dann das Kind in einer Nahaufnahme wie es sich umschaut und nach dem Ursprung der Stimme sucht.

Plötzlich richtet sich die Aufmerksamkeit des Kindes auf einen LED-Bildschirm und eine dort gezeigte Szene aus einem historischen, ethnologischen, schwarz-weißen 16mm-Film. Ein amerikanischer Ureinwohner sitzt auf einem Pferd, das aus der Froschperspektive aufgenommen wurde, ein anderer läuft um ein Feuer, von dem große Rauchwolken aufsteigen.

Bilder werden von der Erde zum Raumschiff gesendet. Das Kind bekommt Angst und schreit laut auf. Wir sehen, wie Monte die Nerven verliert, als er die durchdringenden Schreie hört. Das Werkzeug fällt aus seiner Hand und entschwindet in den schwarzen Weltraum. Während es fällt, rotiert der Schraubenschlüssel um sich selbst.

Und plötzlich ist da die Erinnerung an die ikonische Szene des emporgeschleuderten Knochens in Kubricks *2001: Odyssee im Weltraum* von 1968: Der Schraubenschlüssel ähnelt dem Knochen, der von einem prähumanen Vorfahren gegen den Himmel geworfen wird, voller Triumph über die Entdeckung, dass sich ein Knochen als Werkzeug und/oder als Waffe verwenden lässt. In Kubricks Film verweist der Knochen in seinem Flug zum Himmel auf den evolutionären Schritt vom Affen zum Menschen, von der Natur zur Kultur, den Beginn einer Evolution, die mit der Eroberung des Weltraums endet.

In Claire Denis' *High Life* verhält es sich vollkommen anders. Hier evoziert der sich um sich selbst drehende Schraubenschlüssel die traumatische Erinnerung der blutigen Hand und des in einen tiefen Brunnen geworfenen Steins, mit dem Monte vor langer Zeit, als er noch ein Junge war, einen Menschen getötet hatte. Es ist Montes eigene Hand, die den Stein fallenlässt, aber sie scheint fremd und entleibt, als sei es die Hand eines anderen. Das Opfer war ein junges Mädchen, das, wie wir später erfahren, Montes Hund getötet hatte. Auch diese Bilder wurden auf 16mm-Film festgehalten, wie alle anderen auf der Erde spielenden Szenen, während die Szenen im Raumschiff mit hochauflösenden Digitalkameras aufgenommen wurden. Das verändert nicht nur die optische Erscheinung, sondern auch die akustische Dimension und affiziert das Zusammenspiel von beiden. Der Film spielt auf subtile Weise mit den ästhetischen Unterschieden zwischen analog und digital.

Das in den Weltraum entschwindende Werkzeug leitet keinen Schritt in eine progressivere Zukunft ein, sondern führt zurück in die Vergangenheit. Es evoziert die Erinnerung an ein traumatisches und gewaltsames Ereignis. Die Zeitlichkeit in Denis' Film folgt nicht der Konzeption einer leeren und homogenen Zeit des Fortschritts.[2] Der Rhythmus der Zeit wird durch Wiederholung und Differenz strukturiert.

2 Walter Benjamin, *Über den Begriff der Geschichte. Werke und Nachlass, Kritische Gesamtausgabe 19*, hg. von Gérard Raulet (Berlin: Suhrkamp, 2010), S. 90.

Dies geht Hand in Hand mit der grundlegend unterschiedlichen Funktion, die die Figur des Kindes und seine Herkunft in beiden Filmen hat.

2. Menschliches Leben im Weltraum

Sowohl in *High Life* als auch in *2001: Odyssee im Weltraum* wird die Figur des Kindes mit der Frage assoziiert, welche Möglichkeiten es für menschliches Leben im Weltraum gibt. Die Figur des Kindes repräsentiert und garantiert, mit anderen Worten, die Existenz einer Zukunft im Weltraum. Umgekehrt bedeutet dies, dass die Zukunft davon abhängt, dass es menschliche Reproduktion gibt.[3] *2001: Odyssee im Weltraum* endet mit einer magischen Transformation des alten Astronauten Bowman in einen von einer durchsichtigen Lichtkugel umgebenen Fötus. In der berühmten Schlussszene schwebt dieses engelgleiche »Sternenkind« im Weltraum neben der Erde, schaut sie an, und suggeriert damit eine weitergehende Evolution der Menschheit.

Keine Frau ist an diesem Akt der Fortpflanzung beteiligt. Es handelt sich um die Phantasie der Selbsterschaffung des *weißen* Mannes im Namen der Menschheit, die Teil der Ideologie und des Selbstverständnisses der Eroberung des Weltraums in den 1960er Jahre war. Die Perspektive der Frauen und ihr Anteil an der Fortpflanzung hatte keinen Platz in dieser Science Fiction der Überwindung der Sterblichkeit.

Im Gegensatz dazu sind Frauen in *High Life* stets präsent. Allerdings nicht in der Rolle der liebenden Mutter. Keine einzige der Frauenfiguren unterwirft sich der biopolitischen Aufgabe, die mit Frauen in der menschlichen Reproduktion verbunden wird. Damit drängt sich Frage der Reproduktion umso dringlicher als ein Problem auf. Indem er auf den körperlichen und materiellen Bedingungen der Reproduktion beharrt, bringt der Film die Thanatopolitik als Kehrseite der Biopolitik zum Vorschein, deren Ziel doch eigentlich, so die Analyse von Michel Foucault, die Vermehrung des Lebens darstellt. Wie die Theoretiker_innen der Thanatopolitik in Anknüpfung an Foucault jedoch gezeigt haben, geschieht die biopolitische Optimierung des Lebens über das systematische In-Kauf-Nehmen des Todes ganzer Bevölkerungsgruppen.[4] In dieser Weise bedingen sich Thanatopolitik und Biopolitik.

Das Kind in Denis' Film ist das Produkt einer ganz auf den Körper

3 Penelope Deutscher, *Foucault's Futures: A Critique of Reproductive Reason* (New York: Columbia University Press, 2017).

4 Eingehender dazu Deutscher, *Foucault's Future*, Kapitel 4: »Immunity, Bare Life, and the Thanatopolitics of Reproduction: Foucault, Esposito, Agamben« (S. 105–42).

zentrierten Experimentreihe von Dr. Dibs, die besessen ist von dem Gedanken, ein Kind zu züchten, das gegen die radioaktive Strahlung des Weltraums immun wäre. Das Baby Willow (Scarlett Winsow) ist seinerseits von einer intensiven körperlichen Präsenz. Diese zeichnet auch die Beziehung zwischen Willow und Monte aus. Tatsächlich hat man eine ähnliche Intimität zwischen einem Mann und einem Baby wohl nur selten in einem Film gesehen. Monte kocht für das Baby, füttert es, bringt es zum Einschlafen und Urinieren und wacht über seinen Schlaf; er übt die ersten Schritte mit Willow und lehrt sie, worin Kultur besteht und was ein Tabu ist. Zugleich ist das Baby voller Vertrauen, selbst wenn es weint. Es ist zu allen Zeiten in engem Kontakt mit Monte. Die Reaktionen und Gesten und die Nähe des Babys lassen die Zeit vorrücken und halten Monte am Leben. Die Szenen zwischen ihm und dem Kleinkind sind beeindruckend, faszinierend, zugleich verstörend und in einigen Momenten sogar unheimlich. Etwa wenn er ihr sagt, während sie schläft, dass er sie so leicht wie ein Kätzchen hätte töten können. Oder wenn die Nähe zwischen den beiden, zusammen in einem Bett liegend, zu intim und körperlich wird, beinahe sexuell.

Denis übernahm die Idee, dass eine Erforschung des Weltraums jenseits des Sonnensystems voraussetzt, dass Kinder auf der Reise geboren werden und vor der Strahlung geschützt werden müssen, von dem Physiker Stephen Hawking.[5] Eine Lebensspanne ist nicht genug, um das Sonnensystem zu verlassen, und darum müssen Babys im Weltraum geboren werden: Eine durchaus rationale Überlegung. Science Fiction, zwingt uns, wie Denis lakonisch anmerkt, »wirklich über Zeit nachzudenken«.[6] Weil aber Dibs, die von Juliette Binoche gespielte Ärztin, wie alle anderen Figuren von ihrer Vergangenheit heimgesucht wird, liegt es näher, ihr überwältigendes Verlangen nach einem im Weltraum geborenen Kind auf ihre traumatischen Erfahrungen zurückzuführen als auf rational gesteuerte Überlegungen. Aber wie Freud gezeigt hat und lange vor Freud Kant, entpuppen sich unsere vermeintlich vernünftigsten Gedanken oft als Rationalisierungen einer Spekulation.[7]

5 »Claire Denis on Sex as an Escape – in Space! High Life. TIFF 2019«, Toronto International Film Festival (TIFF), *YouTube*, 2:23 min <https://youtu.be/1pM0wXy77O4> [Zugriff 31. Mai 2022].

6 Ebd.

7 Astrid Deuber-Mankowsky, *Praktiken der Illusion. Kant, Nietzsche, Cohen, Benjamin bis Donna J. Haraway* (Berlin: Vorwerk 8, 2007), S. 11.

3. Reproduktion

Wie im Laufe des Filmes klar wird, hat Dibs ihre eigenen Kinder in ihren Betten ermordet, ihren Ehemann erstochen und erfolglos versucht, sich selbst durch Messerstiche in ihre Gebärmutter zu töten. Dies wird nicht in Rückblenden gezeigt, wie im Falle von Montes Erinnerungen, sondern in einer Unterhaltung berichtet, die Dibs und Boyse in einem besonders vertraulichen und fast zärtlichen Moment führen. Boyse, von Mia Goth gespielt, ist eine der Frauen, an denen Dibs ihr Experiment vornimmt.

Zum Tode verurteilt, wie auch die anderen insgesamt zehn Mitglieder der Crew (fünf weiblich und fünf männlich), hat Dibs sich bereit erklärt, der Wissenschaft zu dienen und Teil der Suchmission im Weltraum zu sein, die Energie aus einem schwarzen Loch gewinnen soll. Dibs besamt die weiblichen Mitglieder der Crew gegen ihren Willen mit dem Sperma der männlichen Mitglieder. Keine der Frauen will schwanger werden. Sie weigern sich explizit und gewaltsam dagegen, als Medium der Reproduktion zu dienen. Sie wissen genau, dass ihre Körper mit diesen Experimenten dem Tod ausgesetzt werden. Sie haben keinen einen Kinderwunsch und wollen sich nicht reproduzieren. Sie haben keine Hoffnung und keine Zukunft. An einer Stelle sagt Boyse zu Dibs, voller Wut und Verachtung: »Es ist unsere Willensstärke, die die Föten tötet.« Nur Dibs, die ihre Reproduktionsorgane zerstört hat, ist besessen von der Vorstellung, es ließe sich mithilfe künstlicher Fortpflanzung ein Kind erschaffen, das »vollkommen« wäre und stark genug, um im Weltraum zu überleben.

Die langhaarige Dibs ist stark, manipulativ, und selbst potent. Sie ist nicht nur eine von dem Gedanken an die Züchtung eines vollkommenen Babys besessene Wissenschaftlerin, sondern auch die einzige sexuell aktive Frau im Film. Eine der beeindruckendsten und beunruhigendsten Szenen zeigt Dibs, wie sie kunstvoll in der sogenannten »fuck box« masturbiert, von Stuart Staples' dramatischen, elektronischen Klängen begleitet. Mit dem hüftlangen Haar, das sich um ihren Körper schlingt, den wilden und doch konzentrierten Bewegungen, der Kamera so nah und der Musik so intensiv, erinnert die Szene an einen Hexentanz (36:00). Und tatsächlich stellt Dibs in einem kurzen Abtausch mit Monte fest, als sie die *fuck box* verlässt, »Ich weiß, ich sehe wie eine Hexe aus.« Und Monte antwortet: »Du bist scharf und du weißt es.« Gefragt, warum sie immer noch an der wissenschaftlichen Mission ihrer Expedition festhält, als alle bereits wissen, dass es sich nur um eine Selbstmordmission handelt, antwortet sie: »Ich habe mich vollständig der Reproduktion verschrieben.« (40:40) Dibs hat sich vollständig einer Reproduktion verschrieben, die nicht durch ihren eigenen Körper geschieht. Für sie

meint Reproduktion die wissenschaftlich unterstützte Reproduktionsmedizin, die es ihr möglich macht, sich ohne Schwangerschaft und Gebärvorgang zu reproduzieren, losgelöst von ihrem Geschlecht und den von ihrer Geschlechtszuweisung erzeugten Erwartungen. Die elaborierte Masturbationsmaschine (die *fuck box*) ist keine Erfindung der Requisite, sondern stammt aus dem »wirklichen Leben«. Sie wird, wie Claire Denis berichtet, im Internet angeboten und wurde dort auch für den Film gekauft.[8]

Indem er auf diese provozierende Weise Wirklichkeit und Surreales mischt, widerspricht der Film unseren Erwartungen, lässt uns rätseln und zwingt uns zum Nachdenken.[9] Indem er das tut, enthüllt *High Life* auch die geschlechterbedingte und rassistische Gewalt, die der Thanatopolitik innewohnt: Während Dibs, die starke und sexuell potente Frau, *weiß* ist, ist Elektra, von Gloria Obianyo gespielt, die erste Frau, die aufgrund von Dibs Experimenten stirbt, Schwarz. Das ist kein Zufall. Und dass es sich um keinen Zufall handelt, wird von Tcherny, dem anderen Schwarzen Mitglied der Crew, gespielt von André Benjamin, auch explizit gemacht: »Selbst hier oben sind Schwarze die ersten, die gehen müssen.« (52:30).

4. Ein Gefängnis ohne Außen

2001: Odyssee im Weltraum und Andrei Tarkowskis *Solaris* von 1972 haben *High Life* offensichtlich beeinflusst. Alle drei Filme verwenden Genrekonventionen der Science Fiction, um die großen Fragen der wissenschaftlich-technischen Gegenwart im Medium und mit den Mitteln des Films zu erörtern. Wie in *2001: Odyssee im Weltraum* und *Solaris*, spielt der Soundtrack in *High Life* eine aktive und wichtige Rolle im Film. Er wurde komponiert und eingespielt von Stuart Staples, dem Englischen Musiker und Sänger der Indieband Tindersticks, mit dem Denis seit mehr als 20 Jahren zusammenarbeitet. Die Musik entstand, bevor *High Life* gefilmt wurde. Das zuerst fertiggestellte Stück, »The Yellow Light«, wurde für den 2014 in Zusammenarbeit von Claire Denis und Olafur Eliasson entstandenen Kurzfilm *Contact* komponiert. Staples' Beschreibung des Arbeitsprozesses gibt einen guten Eindruck von der zentralen Bedeutung, die die Musik für die Erschaffung des »Empfindungsblocks« hat, den *High Life* darstellt:[10]

8 »Claire Denis, Mia Goth and the *High Life* Cast. BFI in Conversation«, am 9. Mai 2019 am British Film Institute aufgenommene Diskussion, *YouTube*, 19:22 min <https://youtu.be/cY_ln3tJDwU> [Zugriff: 31. Mai 2022], 11:52–12:52.

9 Astrid Deuber-Mankowsky, *Queeres Post-Cinema. Yael Bartana, Su Friedrich, Todd Haynes, Sharon Hayes* (Berlin: August Verlag, 2017), S. 73.

10 Gilles Deleuze und Félix Guattari, *Was ist Philosophie?* (Frankfurt a.M.: Suhrkamp,

> Dafür wurde jedes Instrument, jeder Teil in die Stille hineingespielt, mit willkürlichen Anfangspunkten, die Zufallsbewegungen und -beziehungen erzeugen, wenn sie zusammengebracht werden. Dieses Thema, diese Arbeitsweise zieht sich durch die Erschaffung der gesamten Partitur für *High Life*. Die Musiker arbeiteten im allgemeinen ›im Dunklen‹.[11]

Der Klang trägt auf beeindruckende Weise zu der Gestaltung dieser atmosphärischen Umgebung bei, in der Menschen nicht länger im Mittelpunkt der Aufmerksamkeit stehen, sondern als Teil des kosmischen Werdens wahrgenommen werden. Darauf wird auch in Stuart Staples' Schlaflied für Willow angespielt, das mit der Wortbedeutung des Namens Willow spielt, dem »willow tree«, der Weide. Willow spielt Verstecken, tief unter den Bäumen, während Spinnen und Raupen über ihre Hände und Füße kriechen. Sie spaziert über den Sand, spielt mit den Wellen, sie »hört die Stadt keuchen«, sie ist überall und jenseits von Raum und Zeit. Das musikalische Motiv des Willow Songs durchzieht den ganzen Film und wird am Ende von Robert Pattison für die nun 16 Jahre alte Willow gesungen.

Und wie in Tarkowskis *Solaris* spielen Erinnerung und Vergangenheit auch in *High Life* eine zentrale Rolle. In allen drei Filmen ist die narrative Form elliptisch. Der Schnitt und die Verknüpfung von Bildern, Klängen und Wahrnehmungen folgen eher einer surrealen Traumlogik als einer Handlungslogik. Atmosphäre, Empfindung und ästhetischer Ausdruck sind wichtiger als Handlungsstränge. Ziel ist es nicht, eine Geschichte zu erzählen, sondern, um Kubricks berühmte Antwort auf die Frage nach der Bedeutung von *2001: Odyssee im Weltraum* zu zitieren, »das Publikum auf einer tieferen Ebene zu packen«.[12] Das gilt auch für *High Life*. Alle drei Filme benutzen das Genre der Science Fiction als ein experimentelles filmisches Arrangement, um mehr über gegenwärtige Zustände und die menschliche Psyche in ihrem Verhältnis zu Technik, Natur und Kultur, Sexualität und Temporalität zu erfahren.

Zugleich unterscheidet sich *High Life* grundsätzlich von den beiden anderen Science-Fiction-Filmen. Dies hängt damit zusammen, dass *High Life* nicht wie *Solaris* und *2001: Odyssee im Weltraum* eine

2000), S. 191. Im Gegensatz zu einer Ästhetik, die Kunstwerke – Bilder, Klänge, Texte, Filme – als Repräsentationen, Widerspiegelungen oder Symbole auffasst, interpretieren Deleuze und Guattari Kunstwerke als »bewahrte« Empfindungen, als »Empfindungsblöcke« oder, wie sie sie auch nennen, als ein »Emfindungssein« (êtres de sensations).

11 Stuart A. Staples, »Music for Claire Denis' *High Life*« <https://cityslang.com/releases/stuart-a-staples-music-for-claire-denis-high-life> [Zugriff 31. Mai 2022].

12 SciHi Blog, 2021 <http://scihi.org/2001-a-space-odyssey-kubrick/> [Zugriff: 31. Mai 2022].

Literaturverfilmung ist, sondern von Claire Denis und von Jean-Paul Fargeau (auch er ein häufiger Mitarbeiter von Denis) selbst geschrieben wurde.

Abgesehen von der Tatsache, dass *High Life* der geschlechtsbedingten und rassistischen Gewalt der wissenschaftlich-technischen Biopolitik und Thanapolitik nachspürt, hebt sich der Film dadurch von den anderen Filmen ab, dass er den Tod auf eine frappierende, ungewöhnliche, konkrete und materielle Weise als omnipräsent behandelt. Föten sterben, Neugeborene sterben, alle zehn Mitglieder der Crew sterben, mit der Ausnahme von Monte und Willow – die im Weltraum geboren wurde. Sie werden Opfer von Gewaltakten, begehen auf verschiedene Weisen Selbstmord, sterben an Schwangerschaften oder aufgrund der Strahlung. Der Kapitän, gespielt von Lars Eidinger, bekommt Leukämie, erleidet einen Schlaganfall und wird von Dibs behutsam euthanisiert. Boyse, die gezwungen war, Willow zu gebären, klettert, nachdem sie die Pilotin (Agata Buzek) mit einer Schaufel erschlagen hat, an Bord des Shuttles, fliegt in das erste schwarze Loch, das auf dem Weg der Mission liegt und stirbt an sogenannter »Spaghettifikation«, das heißt, dadurch, dass sie durch die gewaltigen Gravitationskräfte auf tödliche Weise gedehnt wird, sobald sie sich in den Ereignishorizont begibt, was eindrücklich und detailliert gezeigt wird. Selbst Dibs verlässt das Schiff, nachdem sie ihre Mission erfüllt hat, schwer verletzt, und entschwindet langsam in die Schwärze des Weltraums. Statt der versprochenen Alternative zur verhängten Todesstrafe wird die Mission lediglich zu einer anderen Form derselben. Das Raumschiff ist nicht mit den neuesten technischen Gadgets ausgerüstet, sondern düster und eng wie ein Gefängnis, mit dem Unterschied, dass es im Weltraum kein Außen des Gefängnisses gibt. In der Tat bezieht sich *High Life* mindestens im gleichen Maße auf den Gefängnisfilm wie auf das Genre der Science Fiction.

Da ist der Eindruck der Beengtheit, der durch die schlechte Beleuchtung und die bedrückenden Farben erzeugt wird. Es gibt kein direktes Licht und keine glänzenden Oberflächen im ganzen Film – außer im hellen weißen Licht, in der allerletzten Szene. Der Eindruck der Gefängnisumgebung wird durch die vielen Point-of-View-Shots verstärkt. Die Kameraarbeit kondensiert eine Atmosphäre von Schaurigkeit, Bedrohung und Verletzlichkeit, die der Soundtrack noch intensiviert. Die Mitglieder der Crew verfügen über keine privaten Räume, sie schlafen in Hochbetten, die Frauen getrennt von den Männern. Sie bekommen Beruhigungsmittel von Dibs, die eine totale Kontrolle über ihre Körper ausübt. Für die Abgabe des Spermas erhalten die Männer eine zusätzliche Dosis Schlafmittel. In einer weiteren Anlehnung an Gefängnisfilme gibt es Leibesübungen, an denen jede_r teilzunehmen hat. Gewaltausbrüche,

Aggressionen sind so allgegenwärtig wie eine gesteigerte sexuelle Attraktion, während zugleich der Geschlechtsverkehr untersagt ist.

Claire Denis und ihr Kameramann Yorick Le Saux arbeiteten eng mit den Schauspieler_innen, in nahem Kontakt mit ihren Körpern im Studio. Es scheint keine Fremdheit und keine Scham zwischen der Kamera und den Körpern zu geben, zwischen dem Organischen und Technischen. Die Kamera gleitet so umstandslos von einem Körperteil zum nächsten, wie sie es mit den Pflanzen in dem Garten der ersten Szene des Films tat. Bisweilen erscheinen die Körper der Schauspieler_innen wie Skulpturen, durch die Beleuchtung, die Intimität und die ungewöhnliche und fremde Schönheit ihrer Bewegungen, Gesten und Mimik. Wir kennen diese cineastische Arbeit mit und auf den Körpern der Schauspieler_innen und die sich daraus ergebenden Spannungen zwischen sexueller Anziehung, Zärtlichkeit, Fürsorge und brutaler Gewalt, die bis zu Kannibalismus und Inzest reicht, von Claire Denis' anderen Filmen.[13]

5. Das Geheimnis des Lebens

Der Bezug auf die Verbindung zwischen Gefängnisfilm und Science Fiction gestattet es Denis, ihre cineastische Suche nach dem Geheimnis des Lebens fortzusetzen, sie mehr noch unter den von der Reise im Weltraum rührenden unterschiedlichen zeitlichen und räumlichen Bedingungen zu intensivieren. Und tatsächlich spielt der Zusammenfall von Raum und Zeit in einen ewigen Augenblick im schwarzen Loch

13 Ich denke an ihren ersten Film, *Chocolat* (1988), über eine französische Familie, die im kolonialen Kamerun der 1950er Jahre lebt und die verbotene sexuelle Spannung zwischen der jungen *weißen* Mutter und dem Schwarzen »Houseboy«. Dieser Film, wie alle ihre folgenden Filme, mit der Ausnahme von *L'intrus*, wurden auch zusammen mit Jean Paul Fargeau geschrieben. *Nénette et Boni* (1996), die erste Zusammenarbeit mit den Tindersticks, handelt von Boni, dem älteren Bruder von Nénette, der um seinen neugeborenen Neffen kämpft, der gegen den Willen seiner Mutter zur Welt kam. Ihr vielleicht bekanntester Film, *Beau travail* (1999) spielt in Djibouti in der französischen Fremdenlegion und widmet sich männlichen Körpern in der Wüste. *Trouble Every Day* (2001), der sich ausdrücklich auf das Horrorgenre bezieht und in dem das sexuelle Begehren dem Kannibalismus in die Quere gerät, mit einem weiteren Soundtrack von den Tindersticks; oder *L'intrus* (2004), der auf Jean-Luc Nancys Essay gleichen Titels über das von ihm selbst empfangene, transplantierte Herz beruht, ein Film, wiederum, mit einem Soundtrack von Stuart A. Staples. *White Material* (2009) über eine junge weiße Frau und sich mühende Kaffeeproduzentin in einem französischsprachigen afrikanischen Land, das einem unmittelbar bevorstehendem Bürgerkrieg entgegensieht; und schließlich *Les salauds* (2013), in dem es um Inzest geht und den Missbrauch einer Tochter durch ihren Vater, wiederum mit Fargeau zusammen geschrieben. Der Soundtrack dieser beiden letzten Filme stammt wieder von den Tindersticks.

ebenso wie der Ausschluss jeder Vorstellung eines Außen eine zentrale Rolle für die im Film erforschte Erfahrung von Zeitlichkeit und Sexualität.

Mit Gilles Deleuze und seinem letzten kurzen, posthum veröffentlichten Text, »Die Immanenz: ein Leben…« könnten wir sagen, dass das Geheimnis des Lebens in *High Life* nicht aus der Perspektive des »individuellen Lebens«, sondern aus den »Zwischen-Zeiten, Zwischen-Momente[n] [des entre-temps]« eines Lebens offenbart wird, das »ein unpersönliche[s] und dennoch singuläre[s]« ist.[14] So betrifft denn die Frage, die *High Life* stellt, trotz der Omnipräsenz des Todes im Film, nicht den Tod selbst, sondern bleibt im Zwischen von Tod und individuellem Überleben. Deleuze zitiert das folgende eindrückliche Beispiel aus Charles Dickens Roman *Our Mutual Friend*, um zu konkretisieren, was »ein Leben, das unpersönlich und dennoch singulär ist« heißen mag. Dies Beispiel weist zugleich darauf voraus, wie sich *High Life* dem Geheimnis des Lebens nähert:

> Ein Schuft, ein übles, von allen verachtetes Subjekt wird sterbend herbeigebracht, und mit einem Mal bezeugen nun die, die ihn pflegen, eine Art Eifer, Achtung, Liebe gegenüber dem geringsten Lebenszeichen des Sterbenden. Jeder bemüht sich um dessen Rettung, bis schließlich inmitten seines Komas der Bösewicht selbst sich von einer gewissen Sanftheit durchdrungen fühlt. Je mehr er aber ins Leben zurückkehrt, desto kälter werden seine Retter, und er gewinnt all seine Unverschämtheit, seine Bosheit zurück. Zwischen seinem Leben und seinem Tod gibt es einen Augenblick, der nur mehr der *eines* Lebens ist, das mit dem Tod ringt. Das Leben des Individuums ist einem unpersönlichen und dennoch singulären Leben gewichen.[15]

In den Szenen, in denen die Protagonisten von *High Life* auf so verschiedene Weisen sterben, scheint genau dieser Moment sich einzustellen, der nicht mehr den Tod eines individuellen Lebens betrifft, sondern nur der Moment *eines* Lebens ist, das mit dem Tod ringt. In diesem Moment allein erscheint die Möglichkeit, dass sich alles ändern könnte und die Vergangenheit nicht länger die Zukunft bestimmen würde. Das wird besonders evident in der Szene, an deren Ende Willow und Monte sich entscheiden, zusammen in/durch das schwarze Loch zu fliegen.

Deleuze gibt ein weiteres Beispiel für die Erscheinung der Singularitäten, die *Ein Leben* ergeben, um zu zeigen, dass *Ein Leben* »überall [ist], in allen Augenblicken, die von diesem oder jenem lebenden Subjekt durchlaufen und von diesen oder jenen erlebten Objekten

14 Deleuze, »Die Immanenz: ein Leben…«, S. 31.
15 Ebd.

gemessen werden«.[16] Dieses zweite Beispiel bringt uns zurück zum Anfang von *High Life* und den ersten Szenen mit Monte und dem Baby Willow. Zugleich präsentiert es eine mögliche Erklärung für die beeindruckende Wirkung von Denis' cineastischer Arbeit mit den Körpern der Schauspieler_innen: für die Bedeutung ihrer Gesten und Mimik, die zugleich singulär, aber nicht individuell, affektiv und nicht bewusst sind. Um Singularitäten und Ereignisse, die *ein* Leben ausmachen, und die »Zufälle[] des entsprechenden Lebens« oder das Leben eines Individuums voneinander zu unterscheiden, verweist Deleuze auf sehr junge Kinder und ihre spezifischen Gesten:

> So ähneln einander etwa die Kinder im frühesten Alter und besitzen kaum Individualität; aber sie haben Singularitäten, ein Lächeln, eine Geste, eine Grimasse, Ereignisse, die keine subjektiven Merkmale sind. Die Kleinkinder werden von einem immanenten Leben durchdrungen, das reines Vermögen ist und sogar Glückseligkeit über die Leiden und Hinfälligkeiten hinweg.[17]

Dies entspricht genau den Szenen, in denen Monte mit der kleinen Willow interagiert, und erklärt auf diese Weise, warum diese Szenen so intensiv wirken. Es ist, als würden die Gesten, das Lächeln, die Schreie des Kleinkindes in Montes Gesten widergespiegelt, die ihn wiederum in den Prozess der Transformation miteinbeziehen. Dieser Prozess befähigt ihn, seine Vergangenheit zu erinnern und sich weniger von ihr bestimmen zu lassen, obwohl seine Erinnerungen ihn heimsuchen. Dies wird von Monte selbst bemerkt und benannt. In einer zentralen Szene erklärt Monte dem Kleinstkind, das ihm ohne jedes Verständnis zuhört, was ein Tabu ist. Ein Tabu verbietet, so Monte, »deine eigene Pisse zu trinken« und »deine eigene Scheiße zu essen«, selbst wenn, wie er hinzufügt, »sie recyclet werden. Selbst wenn es nicht mehr wie Pisse oder Scheiße aussieht.« (07:45) Nachdem er betont hat, dass dieses Tabu für Willow, das »süße kleine Mädchen«, das im Weltraum geboren wurde, nicht gelte, erwähnt Monte plötzlich seinen Vater, »Wenn mein Alter mich jetzt sehen könnte«, und zitiert ihn: »Verletze die Naturgesetze und Du wirst dafür zahlen, Du kleiner Hurensohn!«.

Auf der einen Seite gilt es diese Aussage auf jene anderen zu beziehen, denen zufolge Monte nicht von Eltern, sondern von seinem Hund aufgezogen wurde und andererseits auf die Tatsache, dass alle Mitglieder der Crew wie Abfall behandelt wurden, »Müll, der nicht ins System passte« (28:50), bis, um Monte weiter zu zitieren, »jemand auf die schlaue Idee kam, uns zu recyclen.« (28:58) Montes Erklärung begleitet als

16 Ebd.
17 Ebd., S. 31–32.

Voiceover eine Rückblende zu jener Zeit auf der Erde, als Monte und Boyse noch frei waren, noch nicht verhaftet. Die Erinnerung folgte auf den Tagesbericht, den Monte dem Informationssystem des Raumschiffes jeden Tag geben muss, um die lebenserhaltenden Systeme, bei denen es sich natürlich um Recyclingsysteme handelt, in Betrieb zu halten. Die Perversion der Todesstrafe, das erfahren wir in dieser subtilen Lektion, liegt darin, das Leben zu einem Recyclingsystem zu reduzieren. Es ist offensichtlich, dass diese Einsicht auch gültig bleibt, wenn man umgekehrt formuliert, dass das Leben zur Todesstrafe wird, sobald es zu einem Recyclingsystem reduziert wird.

Wenn wir Deleuze' beiden Beispielen für die Erscheinung der Singularitäten von *einem* Leben folgen, so erscheint es nicht länger zufällig, dass der Film mit den Szenen der Interaktion zwischen Monte und dem kleinen Kind beginnt. In diesen Szenen bekommen wir einen Einblick in das Vermögen *eines* Lebens, das »unpersönlich und dennoch singulär« ist und das sich »nicht auf den bloßen Augenblick begrenzen [lässt], in dem das individuelle Leben dem universalen Tod trotzt.«[18] Auf diese Weise beginnt der Film mit einem Moment der Affirmation, in dem das Vermögen zur Veränderung fühlbar wird. Es erlaubt nicht allein Monte, sich zu erinnern, sondern erlaubt dem Film, seine Geschichte in Rückblenden zu erzählen, zu zeigen, was zu den Toden all der anderen Crewmitglieder geführt hat.

6. Der Eingriff des Todestriebs in die Wahrnehmung und den Rhythmus der Zeit

In ihrer Studie über Deleuze und die Psychoanalyse weist Monique David-Ménard darauf hin, dass Tod für Deleuze mit dem Unpersönlichen zu tun hat und dass Deleuze Freuds Begriff des Todestriebs übernimmt, um die Fähigkeit des »Ichs« zu beschreiben, sich von seinen eigenen Inhalten zu befreien. [19] In seinem zentralen Werk *Differenz und Wiederholung* unterscheidet Deleuze zwei verschiedene Aspekte des Todes:

> Nun meint der erste Aspekt jenes persönliche Verschwinden der Person, den Widerruf *jener* Differenz, die vom Ego, vom Ich repräsentiert wird. Einer Differenz, die nur dem Absterben verschrieben war und deren Verschwinden objektiv in einer Rückkehr zur unbelebten Materie, wie in einer Art Entropie errechnet, repräsentiert werden kann. Allem Anschein entgegen kommt dieser Tod stets – gerade in dem Augenblick, in dem er

18 Ebd., S.31.

19 Monique David-Ménard, *Deleuze et la psychanalyse. L'altercation* (Paris: PUF, 2005), S. 58.

> die persönlichste Möglichkeit darstellt – von Außen und – noch im Augenblick, in dem er die höchste Gegenwart erreicht – aus der Vergangenheit her. Der andere aber, das andere Gesicht, der andere Aspekt des Todes bezeichnet den Zustand freier Differenzen, wenn sie nicht mehr der Form unterliegen, die ihnen ein Ego, ein Ich aufprägte, wenn sie sich in einer Gestalt entwickeln, die meine eigene Kohärenz ebenso wie die einer Identität überhaupt ausschließt.[20]

Die Unterscheidung entspricht der Beschreibung, die Deleuze in seinem Text »Die Immanenz: Ein Leben…« gegeben hat, wenn er sagt, dass zwischen dem Leben des Individuums und seinem Tod »es einen Augenblick [gibt], der nur mehr der *eines* Lebens ist, das mit dem Tod ringt.«[21] Doch hier verwendet Deleuze das Unpersönliche nicht für den Tod, sondern um *ein* Leben zu kennzeichnen, jenseits jeder Unterscheidung zwischen einem partikularen individuellen Leben und einem partikularen individuellen Tod. Es gibt offensichtlich eine gewisse Ununterscheidbarkeit zwischen Leben und Tod in *Einem* Leben.

Dies führt mich zurück zu der Frage der Reproduktion und Zeitlichkeit und zu Freud, der uns gelehrt hat, dass das Geschlechtsleben sich in komplexen Bezügen zwischen Leben und Tod entfaltet. Sexualität mündet nicht – wie Freud in seinem spekulativen *Jenseits des Lustprinzips* (1921) restlos klar macht – in die Reproduktion. Wenn man annimmt, wie Freud nahelegt, dass der Wiederholungszwang ursprünglicher ist als das Lustprinzips, und dass die Todestriebe in einer dauerhaften Spannung mit den Lebenstrieben existieren, dann verbirgt sich das Geheimnis des Lebens tatsächlich in der Frage, wie unter diesen Bedingungen reproduktive Sexualität überhaupt möglich sein sollte. Ebenso mysteriös ist das Überleben von Organismen und die Existenz einer kontinuierlichen Zukunft.

Wie Freud von dem Kontrast der Todes- und Lebenstriebe sagt: »Es ist wie ein Zauderrhythmus im Leben der Organismen; die eine Triebgruppe stürmt nach vorwärts, um das Endziel des Lebens möglichst bald zu erreichen, die andere schnellt an einer gewissen Stelle dieses Weges zurück, um ihn von einem bestimmten Punkt an nochmals zu machen und so die Dauer des Weges zu verlängern.«.[22] Nur wenn wir beachten, dass es sich bei dem Ziel des Lebens in Freuds Spekulation um den Tod handelt, wird klar, wie komplex dieser Rhythmus ist, in dem die Zukunft (und mit ihr auch das Überleben) von einem Umweg abhängt und dem

20 Gilles Deleuze, *Differenz und Wiederholung* (München: Fink, 1992), S. 150. Siehe auch David-Ménard, *Deleuze et la psychanalyse*, S. 58.

21 Deleuze, »Die Immanenz: Ein Leben…«, S. 31.

22 Sigmund Freud, *Jenseits des Lustprinzips*, in Freud, *Gesammelte Werke*, 17 Bde. (London: Imago, 1942–52), xiii (1940), S. 1–69 (S. 43).

»Zurückschnellen«. Dies wird noch komplexer angesichts der Tatsache, dass diese Spekulation aus der Perspektive eines Denkens verfasst ist, das an ein Lebewesen gebunden ist, für das das Unorganische genauso jenseits des Erfahrungshorizontes liegt wie der Tod. Freud weiß, um es zusammenzufassen, genau, dass der Ursprung des Lebens nur rückblickend gedacht werden kann. Daraus folgt, dass selbst wenn Freud einerseits, wie Deleuze klarmacht und kritisiert, den Tod mit der Rückkehr zur unbelebten Materie gleichsetzt, er doch andererseits weiß, dass dies nur ein Teil einer notwendigen Spekulation ist.[23]

Angesichts der Tatsache, dass nicht nur für Deleuze, sondern auch für Freud, der Tod »die Quelle von Problemen und Fragen, das Zeichen ihrer Beharrlichkeit jenseits jeder Antwort« ist,[24] haben wir gute Gründe zu fragen, warum Freud beim Todestrieb und bei der Priorität des Wiederholungszwangs vor dem Lustprinzip bleibt. Selbst wenn, wie er am Ende von *Jenseits des Lustprinzips* zugibt, »die Lebenstriebe so viel mehr mit unserer inneren Wahrnehmung zu tun haben, da sie als Störenfriede auftreten, unausgesetzt Spannungen mit sich bringen, deren Erledigung als Lust empfunden wird, während die Todestriebe ihre Arbeit unauffällig zu leisten scheinen.«.[25] Daraus ergibt sich, dass die Todestriebe viel schwerer nachzuweisen sind.

Der Grund, aus dem Freud an den Todestrieben und der Priorität des Wiederholungszwangs festhält, ist einfach und doch überraschend: Es ist die Entdeckung, dass die psychoanalytische Kur von einem Wiederholungszwang abhängt und ihn sich zu Nutze machen kann.[26] Wie Freud unterstreicht, handelt es sich bei der Psychoanalyse nicht nur um eine Interpretationskunst. Die Möglichkeit, die Triebschicksale zu verändern, hängt vom Übertragungsgeschehen ab, und das heißt, dass das Verdrängte als *gegenwärtige Erfahrung* wiederholt werden muss und nicht lediglich als *bewusstes Erinnern*. Daher hängt die Möglichkeit einer Veränderung im zwanghaften Verhalten, psychoanalytisch gesehen, von einer obsessiven Wiederholung ab. Um es zusammenzufassen: Der Todestrieb ist mit dem Begriff der Zeit als einem Zauderrhythmus im Leben der Organismen verknüpft und damit verantwortlich für die Tatsache, dass die Gegenwart von der Vergangenheit bestimmt wird. Aber andererseits hängt die Möglichkeit der Veränderung des Triebschicksals und einer Unterbrechung der leeren Wiederholung auch vom Todestrieb ab. Deleuze erkennt dies sehr genau und hält daher den »unpersönlichen« Tod für eine »reine und leere Form der Zeit«.

23 Ebd., S. 39–41. Siehe auch David-Ménard, *Deleuze et la psychanalyse*, S. 46.
24 Deleuze, *Differenz und Wiederholung*, S. 149.
25 Freud, *Jenseits des Lustprinzips*, S. 69.
26 Ebd., S. 17.

Nietzsches Begriff der ewigen Wiederkunft aufgreifend, schließt Deleuze: »Die Form der Zeit besteht nur für die Offenbarung des Formlosen in der ewigen Wiederkunft.«[27] So zeigt also, um zu *High Life* zurückzukehren, der Tod in diesem unpersönlichen Aspekt zugleich einen Ausweg aus der Perversion der Todesstrafe auf, das heißt, aus der Reduktion des Lebens auf ein Recyclingsystem. Auf diese Weise wird der Todestrieb ein widerständiges Moment, das sich gegen die gegenwärtige Verbindung von Reproduktionstechniken und Thanatopolitik wendet. Dies wird nicht nur in der Weigerung der Frauen deutlich, sich dem Reproduktionszwang zu unterwerfen, der schließlich nichts anderes ist, als die Erweiterung der Todesstrafe, der sie mit der Reise in den Weltraum zu entkommen suchen, sondern auch in den Momenten eines Zwischen-Leben-und-Tod in der Begegnung von Monte und Baby Willow und später der Entscheidung der beiden, aus freien Stücken in das schwarze Loch zu reisen.

7. *High Life* als eine Intensivierung des Lebens; oder, Der Punkt an dem die Differenz von Zeit und Raum verschwindet

Auch Freud fragt sich, wie die sexuelle Reproduktion erklärt werden kann. Denn wenn man die Priorität des Wiederholungszwangs und des Todestriebs akzeptiert, dann, so Freud, »wäre ja die Kopulation, die dem Lebenslauf entgegenwirkt und die Aufgabe des Ablebens erschwert, […] vermieden worden.«[28] Freud erwägt im Anschluss kurz die von Platon im *Symposion* vorgestellte Theorie des Aristophanes. Dieser Theorie der Kugelwesen zufolge, gab es ursprünglich nicht zwei, sondern drei Geschlechter: das weibliche, das männliche und das androgyne. Alles an diesen Wesen war doppelt: Sie hatten vier Arme, vier Beine und zwei Gesichter. Aber dann entschied sich Zeus, sie entzwei zu schneiden. Nach dieser Teilung »umschlangen sich«, wie Freud, Platons *Symposion* zitierend, schreibt, die beiden Hälften, »verflochten sich ineinander im Verlangen, zusammenzuwachsen…«[29] Diese Theorie würde die Existenz der Lebens- oder Geschlechtstriebe mit dem sehnsüchtigen Verlangen der beiden Hälften erklären, zusammengefügt zu werden und die Kugel zu vereinen.

27 Deleuze, *Differenz und Wiederholung*, S. 125. Deleuze folgt wiederum einem Hinweis Freuds, den er in seinem *Jenseits des Lustprinzips* gibt: »Der Kantsche Satz, daß Zeit und Raum notwendige Formen unseres Denkens sind, kann heute infolge gewisser psychoanalytischer Erkenntnisse einer Diskussion unterzogen werden. Wir haben erfahren, daß die unbewußten Seelenvorgänge an sich ›zeitlos‹ sind.« (S. 27–28)

28 Freud, *Jenseits des Lustprinzips*, S. 61..

29 Ebd., S. 62.

Selbst wenn Freud zugibt, dass er selbst weder an diese Theorie glaubt, noch sie befördern will, können wir die Frage nach dem Verhältnis von Reproduktion und Sexualität mit Freud konkreter untersuchen als mit Deleuze, der sich wenig interessiert zeigt an der Frage der geschlechtlichen Reproduktion. Denn in *High Life* wird die geschlechtliche Reproduktion aus der thanatopolitischen Perspektive von Frauen gesehen, die zum Gebären genötigt werden, sowie von Männern, die ihr Sperma gegen Beruhigungsmittel eintauschen. Aus dieser Perspektive erscheint die menschliche Reproduktion wie eine Art Recyclingunternehmen. Der Film stellt damit die Frage, wie Leben unter den technischen, zeitlichen und räumlichen Bedingungen eines Gefängnisses im Weltraum erfahren wird, das kein Außen oder Jenseits mehr hat. Gewalt, Tod und Sexualität – sie alle werden zu Strategien, die vermeiden sollen, dass man recyclet wird.

Tatsächlich wählen nur Dibs und Monte andere Weisen, dieser Perversion der Todesstrafe zu entfliegen. Monte wählt sexuelle Abstinenz und ein asketisches, monastisches Leben, und Dibs widmet sich der Reproduktion aus wissenschaftlicher Perspektive mit dem Ziel, das menschliche Leben zu vervollkommnen. Für sie ist Reproduktion mit einer wissenschaftlichen Leidenschaft verbunden und der Vorstellung, in ihrer wissenschaftlichen Schöpfung weiterzuleben. Beide Wege würden, für Freud, jeweils vom Todestrieb und den der Selbsterhaltung des Individuums dienenden Ichtrieben geleitet. Darum ist es so wichtig, dass Dibs mit Hilfe der Beruhigungsmittel Monte bewusstlos macht, bevor sie ihn gegen seinen Willen verführt und sein Sperma in Boyses Gebärmutter einführt, gegen wiederum deren Willen. Keine heterosexuelle Liebe ist an dem Vorgang beteiligt und kein Wunsch nach Kind oder Familie.

High Life bringt kunstvoll und auf eine vollkommene Weise zu Tage, was Freud als die »unauffällig[e] Arbeit« des Todestriebs bezeichnet.[30] Indem er das tut, zeigt der Film auch, dass der Tod, in seinem unpersönlichen Aspekt als »reine und leere Form der Zeit«, den Kreis der ewigen Wiederkunft auflöst, der, um Deleuze zu zitieren, »die vorübergehende Gegenwart beinhaltet und nach der Vergangenheit der Wiedererinnerung gestaltet ist« und damit über die reine Wiederholung hinausweist.[31] Wir können nicht sehen, wie Willow aufwächst und groß wird. In einer Szene wacht Monte auf, weil seine Hände weiches Frauenhaar streicheln. Es ist Willows Haar, sie hat inzwischen die Pubertät erreicht und hatte in Montes Bett gelegen (01.13:20–01.14:20). Sobald er erwacht, wirft Monte sie aus dem Bett. Das ist der Moment, in dem sie ihre erste Menstruation erlebt. Nachdem alle Mitglieder der Crew

30 Ebd., S.69..

31 Deleuze, *Differenz und Wiederholung*, S. 124.

bis auf Monte gestorben sind, und nachdem Dibs ihm kurz vor ihrem Verschwinden in den Weltraum eröffnet hat, dass er Willows Vater ist, sehen wir, wie Monte das Kleinstkind akzeptiert, trotz seines anfänglichen Widerstands. In der nächste Szene sieht man den Garten – das Recyclingsystem funktioniert noch immer – und die nun 16 Jahre alte Willow. Monte »füttert« weiterhin »den Hund«, wie er die verhasste Aufgabe nennt, mit seinen täglichen Berichten das System vom Abschalten abzuhalten. Ihr Raumschiff nähert sich einem anderen, das nur von Hunden bewohnt wird. Willow wünscht sich einen Welpen, aber Monte weigert sich, weil die Ansteckungsgefahr zu groß sei. Schließlich nähern sie sich einem schwarzen Loch, das groß genug für den Versuch einer Durchquerung erscheint. Willow will sich dem schwarzen Loch nähern, sie sagt, sie könne fühlen, dass die Dichte sehr niedrig sei und dass es ihnen gelingen werde, hindurchzugelangen. Monte stimmt zu. Während der Vorbereitungen fragt Willow, ob sie wie ihre Mutter aussehe. Monte leugnet das, und erst als sie auf dem Weg zum Ereignishorizont des schwarzen Lochs sind und Willow auf Montes Frage »Sollen wir?« mit »Ja« geantwortet hat, ähnelt Willow plötzlich unheimlicher Weise Dibs. Zusammen mit den beiden tauchen wir in die Aufnahmen von Olafur Eliassons gelben Lichtinstallation aus dem Kurzfilm *Contact* von 2014 ein, bis sie in ein strahlendes Weiß ausklingen, das sich über den ganzen Schirm ausbreitet.

Denis lässt es ganz bewusst offen, ob dieser Eintritt in den Ereignishorizont eines schwarzen Lochs für die beiden den Tod bedeutet oder eine Intensivierung des Lebens. Aber sie macht klar, dass, selbst wenn sie nicht sterben, ihre Erfahrung im Ereignishorizont sich von jedem Überleben unterscheidet: »Das Wort ›Überleben‹ existiert nicht mehr. Sollen wir in der Ewigkeit bleiben? Ich überlebe jeden Tag, wenn ich mich vom Bett erhebe. Sie haben einen Punkt erreicht, der Singularität heißt, an dem Raum und Zeit Null sind. Sie sind irgendwo anders. Sie bekommen, was sie wollen.«[32] Dieses Zitat von Denis zeigt, dass sie sich auf die gegenwärtigen astrophysischen Theorien über schwarze Löcher, Singularitäten, Ereignishorizonte und die entsprechenden Theorien über das Verschmelzen von Raum und Zeit bezieht.[33] Sie hätte sich auch auf Deleuze beziehen können, der wiederum Freuds Begriff des Todestriebs heranzieht und die Spannung zwischen Form und Auflösung der Form sowie Hölderlins Begriff des »Unförmlichen«: »Die äußerste Formhaftigkeit besteht nur für ein exzessives Formloses (das

32 »Claire Denis, Mia Goth and the *High Life* Cast«, 12:52.

33 Denis wurde für den Film von dem französischen Astrophysiker Aurélien Barrau beraten, der auch mit Jean-Luc Nancy zusammen ein Buch geschrieben hat, *Dans quels mondes vivons-nous?* (Paris: Galilée, 2011).

›Unförmliche‹ [i.O.dt.] Hölderlins). Damit wurde der Grund auf einen Ungrund hin überschritten, auf ein universales Zu-Grunde-Gehen, das in sich selbst kreist und nur das Zu-Kommende [à-venir] wiederkehren lässt.«[34] Denis zeigt dieses »Geheimnis des Lebens« in ihrem Film mithilfe digitaler Techniken und Ästhetiken, den neuesten astrophysischen Theorien, mit denen sie experimentiert und die sie kombiniert mit einer aus feministischer Perspektive vorgenommenen scharfen Kritik des gegenwärtigen thanatopolitischen Regime der Reproduktion. Sie beharrt auf den körperlichen und materiellen Bedingungen der Reproduktion, und erweist so den Science-Fiction-Film als ein privilegiertes Medium, um über den Zusammenhang von Zeit und Körper nachzudenken, über Geburt und Reproduktion und eine möglich, über unseren Horizont hinausweisende Zukunft.

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34 Deleuze, *Differenz und Wiederholung*, S. 125.

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Making Kin in the Moreaucene. How the History of the Body May Trouble Animal Studies and Posthumanist Speculations about Future Bodies

Pascal Eitler

English abstract: This paper problematizes the idea of kinship between humans and other animals. It will deal, above all, with Donna Haraway's manifold reflections on making kin with other animals and so-called human-animal symbionts, and ask how the history of the body may trouble animal studies and posthumanist speculations about future bodies – by decentering not only humans but other animals as well. Therefore, I will critically discuss her latest book "Staying with the Trouble. Making kin in the Chthulucene" in confrontation with Herbert George Wells's science fiction "The Island of Doctor Moreau" and the concept of – what I would like to call – the Moreaucene.

The question of future bodies concerns not only the bodies of humans, but also the bodies of animals or, better, other animals.[1] Most animals that most humans usually and consciously encounter or interact with today have been bodily modified by many humans in many ways. These animals were once future bodies, thus, they should not lose sight of the question and the history of future bodies – and the history of the body may deal not only with humans but with other animals as well.[2]

In this context, it seems important to me that, in the past twenty years, an interdisciplinary field of research has emerged within the social sciences, which is dedicated to other animals in their multiple interweavements with humans, also with regard to their bodies: the human-animal studies or, just, animal studies.[3] Animal studies examine humans and other animals in their various relations, thereby, they understand human-animal relationships as an important arena of social order and as an underestimated driver of social change, from ancient

1 For their time and help I would like to thank Philipp Engel, Maren Möhring, Florian Schleking, Monja Schottstädt, Heiko Stoff and Jan Plamper – who died far too young.

2 Cf. for example Maren Möhring (ed.), Tierkörper = Body Politics 2 (2014) No. 4.

3 Cf. for instance Linda Kalof/Brigitte Resl (eds), A cultural history of animals, 6 vols, Oxford 2007; Garry Marvin/Susan McHugh (eds), Routledge handbook of human-animal studies, New York 2014; Linda Kalof (ed.), The Oxford handbook of animal studies, Oxford 2017; Hilda Kean/Philip Howell (eds), The Routledge companion to animal-human history, New York 2018; Mieke Roscher et al. (eds), Handbook of historical animal studies, Berlin 2021.

times to modern societies, not only but – so far – especially for Western Europe and North America. While most studies in this field initially focused on the intellectual background of different representations of humans and animals, many studies are now increasingly devoted to their social production and social productivity in everyday practices.[4]

However, this field is still very heterogeneous. What unites it is not least that many researchers within animal studies are thinking of humans and other animals as evolutionary relatives, as living beings which come into existence and act in kinship with one another – above all with regard to mammals. What makes humans and other animals relatives in this sense is their bodies, especially in respect to their – differently framed – bodily conditions, humans and other animals appear to be quite similar in many ways.

Within the social sciences this idea of kinship not only drives much research within animal studies, it also drives much research in the transdisciplinary field of posthumanist theories.[5] Posthumanist theories is a kind of umbrella term which tried, in the past twenty years, to bundle partly quite different reflections, in particular those of Rosi Braidotti, Cary Wolfe, Karen Barad or Bruno Latour and Donna Haraway. What connects most of these reflections – and what links them to animal studies – is their fundamental critique of prevailing anthropocentrism. They aim to deconstruct an apparently natural register of universal human qualities and common stereotypes about human exceptionality and sovereignty, rationality or modern individuality.[6]

4 Cf. for example Philip Howell, The triumph of animal history?, in: Kean/Howell (eds), Companion, pp. 521-541; Susan Pearson/Mary Weismantel, Does "the animal" exist? Toward a theory of social life with animals, in: Dorothee Brantz (ed.), Beastly natures. Animals, humans, and the study of history, Charlottesville 2010, pp. 17-37; Pascal Eitler/Maren Möhring, Eine Tiergeschichte der Moderne – theoretische Perspektiven, in: Traverse. Zeitschrift für Geschichte 15 (2008), pp. 92-106; Aline Steinbrecher, "They do something". Ein praxeologischer Blick auf Hunde in der Vormoderne, in: Friederike Elias et al. (eds), Praxeologie. Beiträge zur interdisziplinären Reichweite praxistheoretischer Ansätze, Berlin 2014, pp. 29-52. See also Christopher Philo/Christopher Wilbert (eds), Animal spaces, beastly places. New geographies of human-animal relations, London 2000.

5 Cf. for instance Stefan Herbrechter, Posthumanismus. Eine kritische Einführung, Darmstadt 2012; Pramod Nayar, Posthumanism, Cambridge 2014; Janina Loh, Trans- und Posthumanismus zur Einführung, Hamburg 2018; Eva D. Sampanikou/Jan Stasienko (eds), Posthuman studies reader. Core readings on transhumanism, posthumanism and metahumanism, Basel 2021; Stefan Herbrechter et al. (eds), Palgrave handbook of critical posthumanism, London 2022.

6 Cf. in particular Rosi Braidotti, The posthuman, Cambridge 2013; Cary Wolfe, What is posthumanism?, Minneapolis 2010; Karen Barad, Meeting the universe halfway. Quantum physics and the entanglement of matter and meaning, Durham 2007; Bruno Latour, We have never been modern, Cambridge 1993.

For this reason, first, other beings – as relevant potential or actual actors – come into the focus in addition to humans, especially other animals, but plants or things and many other beings as well; and in this regard, second, relations, interactions and diversity receive much more attention than origins, intentions or personality. Against this background, posthumanist theories give a lot of room to corresponding speculations about past, present or future societies, assemblages or collectives and about past, present or future bodies too.[7] Within these posthumanist speculations, the idea of kinship between humans and other animals often takes on the character of an invitation: Humans are not only related to other animals, they should also become more and more related to them – for the assumed sake of the humans and other animals in question. Within recent debates, especially Haraway's manifold reflections about future bodies and making kin with other animals are gaining in attention.[8]

This paper aims to problematize this idea of kinship[9] between humans and other animals from a body history perspective.[10] In this regard, it will deal, above all, with Haraway's latest book "Staying with the Trouble. Making Kin in the Chthulucene". I will try to summarize her alternative project of making kin with other animals not least with the help of bodily modifications through genetic engineering. And I will try to demonstrate in how far this idea of kinship is deeply embedded in the hegemonic position that humans very often take towards other animals – in particular in respect to the long history of animal experiments.[11] In this context, this paper questions Haraway's alternative project of making kin and confronts her concept of the Chthulucene with the concept of the Moreaucene. In doing so, I will ask how the history of the

7 Cf. for example Levi Bryant et al. (eds), The speculative turn. Continental materialism and realism, Melbourne 2011.

8 Cf. in particular Donna Haraway, Staying with the trouble. Making kin in the Chthulucene, Durham 2016.

9 I don't aim to empirically investigate the history of this idea, for example, from Carl von Linné and Charles Darwin or Lewis Henry Morgan onward. Cf. for instance Thomas Trautmann, Lewis Henry Morgan and the invention of kinship, Berkeley 1987.

10 On the body history perspective this paper is based on see also Pascal Eitler, Animal history as body history. Four suggestions from a genealogical perspective, in: Body Politics 2 (2014), pp. 259-274. On the history of the history of the body – in the vein of Michel Foucault and Judith Butler or Pierre Bourdieu – cf. for example Heiko Stoff, Diskurse und Erfahrung. Ein Rückblick auf die Körpergeschichte der neunziger Jahre, in: 1999. Zeitschrift für Sozialgeschichte des 20. und 21. Jahrhunderts 14 (1999), pp. 142-160.

11 In this regard, as will become clearer, this paper also aims to problematize, for instance, Zipporah Weisberg's exaggerated critique of Donna Haraway. Cf. in particular Zipporah Weisberg, The broken promises of monsters. Haraway, animals and the humanist legacy, in: Journal for Critical Animal Studies 7 (2009), pp. 22-62.

body may trouble animal studies and posthumanist speculations about future bodies – by decentering not only humans but other animals as well.

Haraway has distanced herself from the term of posthumanist for some time, not least due to its often perceived closeness to the term of transhumanist, yet, her distancing is very brief not only in "Staying with the Trouble".[12] I have the impression, it is of more strategic than substantial form, thus, I understand at least some of her manifold reflections as posthumanist speculations.

1. Future Bodies

Haraway's latest book "Staying with the Trouble" from 2016 picks up many of the questions and answers from her previous book "When Species Meet" from 2008. But this study does much more than only perpetuate older reflections. It is a political response to the global crisis[13] into which humans – especially from Western Europe and North America – have plunged not only themselves but also many other beings on planet earth. Haraway refuses to refer to the concept of the Anthropocene in this context, which is currently much debated to frame this global crisis. Her study deals not with the Anthropocene but with the "beings of the earth" – the "chthonic ones" – in the face of growing populations and climate changes.[14] Haraway is concerned about the endangered life and possible survival of very different beings, but although she also speaks about plants or bacteria, humans and other animals are clearly at the center of her interest at this point.

At the very heart of this global crisis and the climate changes that seem to follow growing populations, Haraway sees the prevailing idea of kinship based on biological parenthood, linear descent and traditional family role models. In this respect, it becomes clear why her study is devoted to an alternative project of making kin with other animals: "Make kin not babies" is the motto of this project.[15] And it also becomes clear why Haraway rejects the concept of the Anthropocene at this point: There is too much anthropocentrism in it.[16] Because it is not anthropos

12 Cf. for example Haraway, Staying, pp. 55, 97 and 101f.; Donna Haraway, When species meet, Minneapolis 2007, pp. 17-19.

13 At this point, I have to ignore the question of whether this crisis is global or planetary.

14 Haraway, Staying, pp. 2 and 208-210.

15 Ibid., p. 6.

16 For the history of this concept cf. in particular Will Steffen/Paul J. Crutzen/John R. McNeill, The Anthropocene. Are humans now overwhelming the great forces of nature?, in: Ambio 36 (2007), pp. 614-621; John R. McNeill, Great acceleration. An

that has caused this global crisis, but very different humans to a very different degree, in direct confrontation or in direct cooperation with many other animals and many other beings. For this reason, Haraway opposes the concept of the Anthropocene with the concept of – what she calls – the Chthulucene. Haraway explains that Chthulucene is a compound word from the ancient Greek khthôn meaning "bound to the earth" and kainos meaning "a time of beginning".[17]

This paper is not the place for an extensive discussion of Haraway's fundamental critique of the concept of the Anthropocene.[18] However, from a body history perspective, it seems important to me that unlike in the case of the concept of the Anthropocene, the concept of the Chthulucene does not assume absolute dominance of humans per se, but seriously includes, above all, other animals – as relevant potential or actual actors – in the analysis. Haraway develops her concept of the Chthulucene as a time and space of making kin with other animals – of becoming with, and learning from, each other – in order to sharpen the view not only for the current dangers of, but also for a political response to, the global crisis. Therefore, she opposes the prevailing anthropocentrism with – what she calls – a multispecies compostism that stresses the countless interweavements of humans and other animals with each other, with many other beings and with planet earth as a complex ecological system – not least as the necessary compost for future bodies.[19] Haraway describes her manifold reflections also as a "tentacular thinking"[20] and in this sense, in "Staying with the Trouble" she not only turns to social sciences and life sciences, but also, much more than in "When Species Meet", to science fiction and pop art, indigenous rituals and ancient myths from all parts of the world, for example to the famous stories about the goddess Gaia or the gorgon Medusa.

As Haraway notices, the concept of the Chthulucene is not unproblematic in this regard, because of its historical semantics which roots in ancient myths and their understanding of "sex" and "race", "honor" or "fame".[21] It is also not unproblematic, because of its linguistic proximity

environmental history of the Anthropocene since 1945, Cambridge 2016; Dipesh Chakrabarty, The climate of history in a planetary age, Chicago 2021. See also Christophe Bonneuil/Jean Baptiste-Fressoz, The shock of the Anthropocene. The earth, history and us, London 2016; Simon L. Lewis/Mark Maslin, The human planet. How we created the Anthropocene, New Haven 2018; Eva Horn/Hannes Bergthaller, The Anthropocene. Key issues for the humanities, New York 2020.

17 Haraway, Staying, p. 2.

18 Ibid., pp. 30ff. and 99ff.

19 Ibid., pp. 97-102.

20 Ibid., pp. 30ff.

21 Cf. for example ibid., p. 101.

to "The Call of Cthulhu", a fantasy story and horror fiction from Howard Phillips Lovecraft from 1928.[22] Therefore, Haraway distinguishes the Chthulucene linguistically from Cthulhu – some kind of cruel, cosmic, chimerical monster or god. And in this regard, her multispecies compostism reads as a radical alternative to his chauvinistic racism.[23] However, in both cases it is transgression or intermixture and migration that create ambiguity and irritation or trouble, a trouble that Haraway wants to stay in and that Lovecraft wants to get rid of. In his case it is for example the connection of "white" people and "black" people or humans and amphibians.

Especially at the end of her study, Haraway describes what it could mean that humans make kin with other animals and illustrates how far the trouble could go in her case. At this point, she not only questions the seemingly clear border between humans and animals, she also invites humans to cross or, better, transgress it. Thus, her study is expressly no longer just about past or present bodies, it also deals with posthumanist speculations about future bodies. Within the framework[24] of a science fiction, Haraway describes five generations of so-called human-animal symbionts, all named Camille, in a settlement of compostists in North America supposedly founded in 2020. This science fiction spans 400 years.[25]

Camille's story begins with the first Camille being implanted with genetic material from a North American monarch butterfly before birth in 2025. For this reason, the first Camille adopts the changing colors and skin patterns of a monarch butterfly and its special capacity to digest milkweed. A few decades later, in 2100, the second Camille is implanted with other genetic material from a monarch butterfly during puberty – this time consciously and voluntarily. As a result, the second Camille develops a kind of feelers in order to anticipate and appreciate the

22 Cf. in particular Howard Phillips Lovecraft, The call of Cthulhu and other weird stories, London 1999 (orig. 1928). See also David Simmons (ed.), New critical essays on H. P. Lovecraft, New York 2013; Antonio Alcala Gonzalez et al. (eds), Lovecraft in the 21st century. Dead, but still dreaming, New York 2021.

23 Haraway, Staying, pp. 101, 169 and 173f. Cthulhu has many tentacles, but it has nothing to do with "tentacular thinking". Misleading in this regard for example: Patricia MacCormack, The ahuman manifesto. Activism for the end of the Anthropocene, London 2020, p. 115.

24 On the role of science fiction for animal studies and posthumanist speculations cf. for example Joan Gordon, Animal studies, in: Mark Bould et al. (eds), The Routledge companion to science fiction, New York 2009, pp. 331-340; Lisa Yaszek/Jason W. Ellis, Science fiction, in: Bruce Clarke/Manuela Rossini (eds), The Cambridge companion to literature and the posthuman, Cambridge 2017, pp. 71-83. See also Sherryl Vint, Animal alterity. Science fiction and the question of the animal, Liverpool 2010.

25 Haraway, Staying, pp. 144ff.

sensations or, better, the feelings of a monarch butterfly.[26] In this context, Haraway speaks of bodily modifications through genetic engineering. The following three Camille don‘t experience any further bodily modifications through genetic engineering, but they spend a lot of time with caring for, and living with, the monarch butterflies and the humans with whom the monarch butterflies live and with whom they share not only ecological systems and regional conditions but also ancient myths and indigenous rituals.[27] At the end of Camille's story in 2425 one billion humans, a third of all humans, are so-called human-animal symbionts.[28]

Not exclusively, but especially with the help of genetic engineering, Haraway – trained as a biologist – tries to overcome the prevailing idea of kinship based on biological parenthood, linear descend and tradetional family role models. She aims, I would like to argue, at political transformations through bodily modifications in order to remodel human-animal relationships. Haraway promotes fundamental changes within human-animal relationships, she wants, as will become clearer, to slowly improve and supposedly optimize the existence or, better, co-existence of humans and other animals. And she tries to challenge the prevailing idea of kinship further by making Camille's so-called symbiont not a mammal, but an insect.[29]

Even if "making kin" means a lot more to Haraway than bodily modifications through genetic engineering and she aims at "making kind"[30] in a much broader sense, it seems to me that she does not accidentally put this science fiction at the end of her study to bundle most of her previous reflections narratively and sharpen them creatively. Therefore, this paper deals primarily with Camille’s story, it is not the place to adequately consider Haraway‘s manifold reflections in all their breadth.[31]

2. Staying with the Double

In the following, I try to critically discuss the concept of the Chthulucene and Haraway‘s alternative project of making kin with other animals from a body history perspective. In this respect, it is helpful to read her latest book always in the context of her previous book "When Species

26 Ibid., pp. 152ff.
27 Cf. in particular ibid., pp. 154ff.
28 Ibid., p. 166.
29 Nevertheless, the motif of the butterfly seems almost stereotyped in this context.
30 Haraway, Staying, p. 103.
31 I will withhold most of my sympathies and emphasize most of my doubts.

Meet", which has quickly become a central resource in animal studies in general and animal history in particular.[32] "When Species Meet" deals primarily with current debates and scientific facts within the social sciences and life sciences. In doing so, Haraway problematizes the seemingly clear border between humans and animals and instead reconstructs their co-existence and co-evolution or, better, co-history.[33] In "Staying with the Trouble", I have the impression, she gives much more room to science fiction – but this does not mean that her manifold reflections lose any of their value. In this sense, with regard to Camille's story, I'm absolutely not interested in somehow playing off scientific facts against science fiction, I'm only interested in questioning a special aspect or certain kind of posthumanist speculations – with "generous suspicions".[34]

While Haraway bases most of her manifold reflections in "Staying with the Trouble" on empirical observations and concrete examples of transformative practices, in Camille's story, this is a crucial point, she focuses much more on transformed actors. At first glance, with regard to so-called human-animal symbionts and political transformations through bodily modifications, she seems to argue consequently materialistic at this point, like a "thoroughgoing materialist"[35] and seemingly very similar to her much older "Cyborg Manifesto".[36] But I have the impression that the "Cyborg Manifesto" insists much more on the point that bodies are constantly being transformed – with or without technical improvements – and that borders are permanently being transgressed, in this case the seemingly clear border between nature and culture. Also in her "Companion Species Manifesto" or in "When Species Meet" Haraway moves above all on this level of, I would like to say, everyday practices.[37]

The "Cyborg Manifesto" was of massive importance for the history of the body – in the vein of Michel Foucault and Judith Butler[38] or Pierre

32 Cf. for example Chris Pearson, History and animal agencies, in: Kalof (ed.), Handbook, pp. 240-257; Roland Borgards, Introduction. Cultural and literary animal studies, in: Journal of Literary Theory 9 (2015), pp. 155-160; Eitler/Möhring, Tiergeschichte, pp. 92-95; Steinbrecher, "They do something", pp. 30-33.

33 Cf. for instance Haraway, When species, pp. 27, 63 and 220. See also Donna Haraway, The companion species manifesto. Dogs, people, and significant otherness, Chicago 2015, p. 12.

34 This is what Haraway recommends to her readers. Haraway, Staying, p. 136.

35 Haraway, Staying, p. 42.

36 Cf. in particular Donna Haraway, Cyborg manifesto, in: Donna Haraway, Simians, cyborgs and women. The reinvention of nature, New York 1991, pp. 149-182.

37 Cf. for example Haraway, When Species, pp. 205-248.

38 This paper is not the place to adequately consider Barad's fundamental critique of Foucault and Butler, but it seems to me not fruitful to criticize researchers for not

Bourdieu.[39] Camille's story points in a different direction – for it has remarkable effects whether we focus primarily on everyday practices or on certain actors.[40] Wouldn't it be more consequently materialistic, to say it with and against Haraway, to rely on the ongoing repetition of unstable materializations in everyday practices than on the alleged stability and extraordinary form of bodily modifications through genetic engineering for certain actors?

Haraway tries to recognize one in the other, but from the body history perspective this paper is based on, the cyborg turned out to be a fruitful question while the symbiont seems to be a problematic answer. This is also the case because bodily modifications in the case of cyborgs are quite different from bodily modifications in the case of symbionts, not per se but for most humans, because things and animals exist – so far – in fundamentally different relationships with most humans. Thus, addressing not only humans but also things or animals, plants or bacteria – as relevant possible or actual actors – should not mean ignoring the many distinctions between them because these distinctions have consequences.[41] As long as most humans make such distinctions, for example in moral or legal terms, it seems reasonable to question relationships between humans and things or animals rather with genealogical intent and not to answer them with ontological spirit – in the name of a new ontology.[42]

This paper is not the place for an extensive discussion of Haraway's great influence on the transdisciplinary field of new ontology or, better, new materialism.[43] There are many, very fine and very strong links

elaborating programmatically on a certain issue that they simply do not empirically investigate. Cf. in particular Karen Barad, Posthumanist performativity. Toward an understanding of how matter comes to matter, in: Signs 28 (2003), pp. 801-831.

39 Foucault and Butler are still very regularly and very simplistically played off against Bourdieu – and vice versa. In the following, I would like to combine Foucault and Butler with Bourdieu.

40 See also Andreas Reckwitz, Toward a theory of social practices. A development in culturalist theorizing, in: European Journal of Social Theory 5 (2002), pp. 245-265.

41 In this context, it is crucial to speak about distinctions not differences.

42 Haraway calls her alternative project also an "ontological revolution". Haraway, Staying, p. 162. On the genealogical intent of body history still see Michel Foucault, Nietzsche, genealogy, history, in: Paul Rabinow (ed.), The Foucault reader, London 1991, pp. 76-100. Cf. in particular Joan W. Scott, History-writing as critique, in: Keith Jenkins et al. (eds), Manifestos for history, London 2007, pp. 19-38. See also Eitler, Animal history.

43 And it is not the place to distinguish clearly between various types of new ontology and new materialism in relation to posthumanist theories or posthumanist speculations. Cf. for example Diana Coole/Samantha Frost (eds), New materialisms. Ontology, agency, and politics, Durham 2010; Rick Dolphijn/Iris van der Tuin (eds), New materialism. Interviews & cartographies, Ann Arbor 2012; Katharina Hoppe/

between new materialism and the history of the body or other fields within the social sciences as well – not least just because of Haraway's great influence. But it seems to me that it is a serious misunderstanding of many researchers within new materialism that the social sciences are now paying more attention to bodies because they have paid too little attention to materiality for so long as, for example, Barad claims.[44] It may be the case that Barad – trained as a physicist – is interested in bodies because she is interested in materiality, however, others, such as Foucault and Butler or Bourdieu, are interested in bodies, I would like to argue, because they are interested in the social, in social order and social change. Hardly anyone has made this clearer than Bourdieu. He programmatically views bodies not as the material fundament but as a materializing resource for manifold practices, and, in doing so, he empirically focuses on bodies in their very concrete modes of existence as a certain "state of the social" – as social beings or social becomings, as socially produced and socially productive. For him, a social order is "merely the order of bodies".[45]

In this regard, the concept of the social makes the traditional distinction between nature and culture, whose fundamental critique still binds many researchers within new materialism, simply unnecessary. The social sciences don‘t have to decide whether it is absolutely right or absolutely wrong, they do not have to distinguish between nature and culture, nor do they have to claim "naturecultures" or a "continuum" between nature and culture.[46] How may the social sciences largely overcome this powerful distinction if they permanently reproduce it more than necessary?[47] The concept of culture only makes sense in

Thomas Lemke, Neue Materialismen zur Einführung, Hamburg 2021. See also the informative discussion in Casper Jensen et al., New ontologies? Reflections on some recent "turns" in STS, anthropology and philosophy, in: Social Anthropology 25 (2017), pp. 525-545; Heiko Stoff, Materialität, in: Aenne Gottschalk et al. (eds), Doing space while doing gender – Vernetzungen von Raum und Geschlecht in Forschung und Politik, Bielefeld 2018, pp. 79-95; Christopher N. Gamble/Joshua S. Hanan/Thomas Nail, What is new materialism?, in: Angelaki 24 (2019), pp. 111-134.

44 Cf. in particular Barad, Performativity. Not only the material culture studies show that the social sciences were already interested in materiality – and above all in things – before new materialism undoubtedly advanced the current discussion. Cf. for instance Dan Hicks/Mary C. Beaudry (eds), The Oxford handbook of material culture studies, Oxford 2010; Daniel Miller, Material culture. Why some things matter, London 1998; Arjun Appadurai (ed.), The social life of things, Cambridge 1986.

45 Merely – not only. Pierre Bourdieu, Pascalian meditations, Stanford 2000, pp. 150 and 168. For him also things are a certain "state of the social".

46 Cf. in contrast Haraway, Companion species, pp. 1-14. See also Braidotti, The posthuman, pp. 82f.

47 At least in so-called modern societies, I would like to suggest, it is – so far – almost impossible to absolutely overcome this powerful distinction.

contrast to the concept of nature – and vice versa. Trying to reject this traditional distinction does not mean denying, for example, bodily conditions and their various effects, yet, we may not understand these as universal or invariable, but – with reference to Haraway and many others – as "situated biologies" or "local biologies".[48] What the social sciences can observe scientifically – with their different methods and specific data – is in its very concrete modes of existence always a certain "state of the social". The concept of the social, thus, relieves the history of the body of posing programmatic questions – about nature, culture and the materiality of just everything – that are not really answered empirically. In this sense, this paper tries to "keep the social flat".[49] While many researchers within new materialism are stressing the importance of radically historicizing ontology, only a few of them are showing an interest in seriously considering history. While new materiallism is devoted to the necessary failure of stable materiality, I would like to argue, the history of the body is engaged with the changing effects of unstable materializations[50] – it deals with the social production of different bodies as socially productive.

Against this background, Haraway‘s manifold reflections on making kin with other animals and so-called human-animal symbionts may be discussed critically: Camille does not really exist in symbiosis or sympoiesis with a monarch butterfly, Camille only exists with a very small section of its genetic material. From a body history perspective, Camille is a human whose skin has an extraordinary coloring and pattern or whose sense of smell has an extraordinary range. The bodily modifications curiously welcomed by Haraway are exactly that – bodily modifications that one can regularly and continuously observe in many ways in everyday practices as well.[51] One also achieves them by feeding or grooming, playing with, or caring for, somebody. That some of Camille’s bodily modifications are caused by genetic engineering in no way makes them more material or stable, important or troubling per se. The range of what humans – potentially can and actually do – smell and

48 Cf. for example the important studies of Margaret Lock, Anne Fausto-Sterling, Sarah Franklin or Hannah Landecker. See also the informative discussion in Jörg Niewöhner/Margaret Lock, Situating local biologies. Anthropological perspectives on environment/human entanglements, in: Biosocieties 13 (2018), pp. 681-697.

49 Cf. in general Bruno Latour, Reassembling the social. An introduction to actor-network-theory, Oxford 2005, pp. 165-172; Patrick Joyce, What is the social in social history?, in: Past & Present 206 (2010), pp. 213-248. Also Latour is still very regularly and very simplistically played off against Bourdieu – and vice versa. There are no doubt many incomparabilities, but there are many comparabilities as well.

50 Emphasizing materializations is therefore something else than stressing materiality.

51 See also Jakob Tanner, History of body, in: Neil J. Smelser/Paul B. Baltes (eds), IESBS, Amsterdam 2001, pp. 1277-1282, p. 1281.

taste or sense and feel differs a lot even in humans who have not been bodily modified through genetic engineering as Camille has been.[52] And it will differ for Camille over the years as well – because it is based on unstable materializations.

With the help of genetic engineering, Haraway aims to decenter humans. But by stressing that other animals in the Chthulucene should not experience any bodily modifications through genetic engineering, I have the impression, Haraway somehow puts humans at the center again.[53] By motivating only humans to transgress the seemingly clear border between humans and animals, she reproduces that border more than necessary.[54] Camille's story, thus, never really raises the question of whether Camille is still a human – in principle an anthropos. From this point of view, the Chthulucene is perhaps best understood as a kind of Anthropocene double, and Haraway, I would like to say, is not only staying with the trouble – she is also staying with the double.

Maybe this is strategically helpful.[55] Haraway is interested in agency, her own and that of other humans or other animals as well.[56] With Camille's story she tries to increase agency, not decrease it. But, to put it with and against Haraway, doesn't it matter whose agency is increasing whose agency?[57] On whom were these bodily modifications through genetic engineering tested before they succeeded in Camille's case? Probably also on humans – but primarily on other animals. And these animals have by no means consented to the removal of genetic material and the animal experiments carried out on them or other animals – regardless of whether they are perceived as relevant potential or actual actors or not.[58] Animal experiments not only have a long history, but in Camille's case also an unthemed continuity. From a body history perspective with genealogical intent, this is a crucial point.

With regard to the multispecies possibilities of future bodies, Haraway points out the multispecies memories of past bodies, of the dead ones and their endangered legacy.[59] This seems to me to be an important reason why she has an insatiable interest in ancient myths and indigenous rituals from all parts of the world. This paper is not the place

52 Cf. for instance Mark M. Smith, A sensory history manifesto, University Park 2021; Constance Classen (ed.), A cultural history of the senses, 6 vols, London 2014ff.
53 Haraway, Staying, pp. 141 and 147.
54 See also – in a different context – Bruce Braun, Modalities of posthumanism, in: Environment and Planning A 36 (2004), pp. 1352-1355, p. 1354.
55 Cf. for example Haraway, Staying, p. 157.
56 She also speaks about a "bestiary of agencies". Haraway, Companion species, p. 6.
57 Cf. for instance Haraway, Staying, pp. 12 and 34f.
58 Cf. in particular Haraway, When species, pp. 69-94.
59 Cf. for example Haraway, Staying, pp. 154-164.

for an extensive discussion of Haraway‘s recent move to – what she calls – situated animism.[60] But the bodily modifications through genetic engineering, which she deals with at the end of her study, also serve to commemorate species threatened or destroyed by growing populations and climate changes. Yet, this kind of "vital memory"[61] is based, I would like to argue, on the oblivion of billions of animals that have been used – caged and killed – in the long history of animal experiments. And somehow it is telling that "Staying with the Trouble" is appearing in a series of books called "Experimental Futures".[62]

In this sense, this paper does not opt for other animals also experiencing bodily modifications through genetic engineering. And this paper is not the place to debate or judge – promote or negate – the possible benefits of animal experiments for certain humans or other animals as well.[63] My concern is rather that Haraway does not pay adequate attention to the long history of animal experiments and its unthemed continuity in "Staying with the Trouble" or, better, in Camille‘s story.[64] In "When Species Meet", in contrast, she gives a lot of room to humans, other animals and their different relationships within animal experiments.[65] And in this context, Haraway defends herself for good reasons against any kind of "moral comfort" – on all sides of the debate.[66] But from this point of view, there is too much "moral comfort" in the concept of the Chthulucene.

In Camille’s story, Haraway does not seriously consider that the transgression of the seemingly clear border between humans and animals, which she promotes in the case of humans, has been forced on animals long before and again and again. In her posthumanist speculations about future bodies she does not take enough account of the historical fact that not only scientific knowledge about the supposed differences between humans and animals and the biopolitical hierarchies that may derive from them, but also scientific knowledge about the supposed similarities between humans and animals and the

60 Ibid., pp. 162 and 88.

61 Ibid., p. 166.

62 "Experimental Futures: Technological Lives, Scientific Arts, Anthropological Voices" is a series of books edited by Michael M. J. Fischer and Joseph Dumit.

63 Cf. for instance Jeremy R. Garrett (ed.), The ethics of animal research. Exploring the controversy, Cambridge 2012; Norbert Alzmann, Zur Beurteilung der ethischen Vertretbarkeit von Tierversuchen. Tübingen 2016; Tom L. Beauchamp/David DeGrazia, Principles of animal research ethics, New York 2020.

64 She addresses this issue only briefly in another part of her study in the context of a hormone therapy. Haraway, Staying, pp. 105ff.

65 Regardless of whether you agree with all of her manifold reflections. For an exaggerated critique of Haraway cf. for instance Weisberg, The broken promises.

66 Cf. in particular Haraway, When species, p. 75.

biopolitical dehierarchizations that may derive from them are very often based on animal experiments. Humans don't only identify themselves as humans by attempting to distinguish themselves in principle from animals; they also do this by claiming to be distinguished from animals only in degrees – as evolutionary relatives.[67]

3. Animal Experiments and Research into Feelings

It seems to me that Haraway's posthumanist speculations about future bodies, bodily modifications through genetic engineering and so-called human-animal symbionts, thus, can only be adequately considered with regard to the long history of animal experiments in the life sciences – which later encompassed large parts of the behavioral sciences. Against this background, I would like to question Haraway's alternative project of making kin with other animals and, as will become clearer, its hidden assumptions about supposed feelings.

Animal experiments are both an important basis and a consequential effect of the changing scientific knowledge about humans and other animals as evolutionary relatives – especially with regard to the remarkable developments of the life sciences in general and physiology in particular.[68] Starting with groundbreaking innovations in the second half of the 18th century, physiology became something like the leading life science in Western Europe and North America during the second half of the 19th century[69] – in the exact period in which the idea of kinship between humans and other animals and evolutionary theory gained in academic reputation and public attention.[70] Physiology attained this

67 See also Joanna Bourke, What it means to be human. Reflections from 1791 to the present, London 2011.

68 Cf. in general Nicolaas Rupke (ed.), Vivisection in historical perspective, London 1987; Holger Maehle, Kritik und Verteidigung des Tierversuchs. Die Anfänge der Diskussion im 17. und 18. Jahrhundert, Stuttgart 1992; Anita Guerrini, Experimenting with humans and animals. From Galen to animal rights, Baltimore 2003; Mitchell Ash, Tiere und Wissenschaft. Versachlichung und Vermenschlichung im Widerstreit, in: Gesine Krüger et al. (eds), Tiere und Geschichte. Konturen einer Animate History, Stuttgart 2014, pp. 267-291. See also Hans-Jörg Rheinberger/Michael Hagner (eds), Die Experimentalisierung des Lebens. Experimentalsysteme in den biologischen Wissenschaften 1850/1950, Berlin 1993.

69 Cf. in particular Philipp Sarasin/Jakob Tanner (eds), Physiologie und industrielle Gesellschaft. Studien zur Verwissenschaftlichung des Körpers im 19. und 20. Jahrhundert, Frankfurt 1998; Karl Rothschuh, History of physiology, Huntington 1973.

70 Cf. for example Peter Bowler, Evolution. The history of an idea, Berkeley 2003; Edward Larson, Evolution. The remarkable history of a scientific theory, New York 2004. See also Eve-Marie Engels (ed.), Charles Darwin und seine Wirkung, Frankfurt 2009.

position on the supposition that life or, better, the body can only be comprehensively understood and studied innovatively on living beings that are still alive – as a "milieu intérieur" as Claude Bernard, one of the most influential physiologists of this period, put it.[71]

Since the second half of the 19th century, many large physiological laboratories were established throughout Western Europe and North America, and their research was based to a large extent on animal experiments and mainly vivisections.[72] Other animals – especially other mammals but amphibians as well[73] – came into the focus of their research, not least, because humans were considered animals in terms of their bodies and biological similarities. At this point, physiology and evolutionary theory were closely intertwined in a momentous manner. The idea of kinship between humans and other animals was shaped, I would like to emphasize, not only by evolutionary theory, as Haraway stresses. This type of "border trouble"[74] was also shaped by physiology and, thus, animal experiments.

The precise function of certain organs and the organization of metabolism, blood circulation and blood loss, the reaction to hunger and the reaction to poison, extreme heat or extreme cold, sleep deprivation or oxygen deprivation, brain surgery and fetal surgery, the perception of colors or the perception of pain – never before has the lifes, or rather the bodies, of certain animals of different species been studied and compared so numerously, so extensively, so thoroughly as since the second half of the 19th century, almost always to the untimely death of the particular animals.[75] Human experiments played a less crucial role in the life sciences compared to animal experiments. But from the beginning

71 Cf. in general Claude Bernard, Introduction à l'étude de la médecine expérimentale, Paris 1966 (orig. 1865); Claude Bernard, Leçons sur les phénomènes de la vie communs aux animaux et aux végétaux, Paris 1885 (orig. 1878).

72 Cf. for instance Timothy Lenoir, Instituting science. The cultural production of scientific disciplines, Stanford 1997, pp. 96-130; Constantin Goschler, Rudolf Virchow. Mediziner, Anthropologe, Politiker, Köln 2002, pp. 212-274; Sven Dierig, Wissenschaft in der Maschinenstadt. Emil Du Bois-Reymond und seine Laboratorien in Berlin, Göttingen 2006; Rob Boddice, The science of sympathy. Morality, evolution, and Victorian civilization, Chicago 2016; Rob Boddice, Humane professions. The defence of experimental medicine, 1876-1914, Cambridge 2021. See also Heiko Stoff, Alraune, Biofakt, Cyborg. Ein körpergeschichtliches ABC des 20. und 21. Jahrhunderts, in: Simone Ehm/Silke Schicktanz (eds), Körper als Maß? Biomedizinische Eingriffe und ihre Auswirkungen auf Körper- und Identitätsverständnisse, Stuttgart 2006, pp. 35-50.

73 Cf. for example Axel Hüntelmann, History of experimental animals and the history of animal experiments, in: Roscher et al. (eds), Historical animal studies, pp. 509-524.

74 Harriet Ritvo, Border trouble. Shifting the line between people and other animals, in: Social Research 62 (1995), pp. 481-500.

75 See also Guerrini, Experimenting; Rothschuh, History.

the two were often strongly connected, and some research that was initially conducted in animal experiments has finally been continued in human experiments – and vice versa.[76]

In this sense, the life sciences not only changed the scientific knowledge about bodily conditions, they also concerned the social production of different bodies. While within physiology, in addition to smaller amphibians such as frogs, primarily larger mammals such as dogs and cats or rabbits were used, with regard to bacteriology and its enormous gain in public attention, smaller mammals such as mice and rats have increasingly become the focus of research since the last third of the 19th century. With the fast development of genetics since the last third of the 20th century, especially insects such as certain mayflies were first constructed and then consumed by the life sciences.[77] Thus, it seems to me not coincidental, that the other animal Haraway is dealing with in Camille's story is an insect.

Since the last third of the 19th century, the life sciences become more and more differentiated – as a field of research that deals with processes within, and structures of, living beings – and ultimately include genetics or neurology as well, in addition to physiology or pharmacology, biology or bacteriology. In this regard, this is a crucial point, the life sciences and especially physiology were also of great importance for the growing research into feelings – affects or emotions[78] – from the last third of the 19th century onward.[79] As a result, the older distinction between "higher" human feelings and "lower" animal sensations lost much of its former importance – not least because of certain animal experiments. Some researchers in physiological laboratories during that period have described a lot of biological similarities between humans and other ani-

76 Cf. for instance Volker Roelcke, Tiermodell und Menschenbild. Konfigurationen der epistemeologischen und ethischen Mensch-Tier-Grenzziehung in der Humanmedizin zwischen 1880 und 1945, in: Birgit Griesecke et al. (eds), Kulturgeschichte des Menschenversuchs im 20. Jahrhundert, Frankfurt 2009, pp. 16-47; Jordan Goodman et al. (eds), Useful bodies. Humans in the service of medical science in the twentieth century, Baltimore 2008; Roland Borgards/Nicolas Pethes (eds), Tier – Experiment – Literatur. 1880-2010, Würzburg 2013; Nicolas Pethes et al. (eds), Menschenversuche. Eine Anthologie 1750-2000, Berlin 2021. See also Guerrini, Experimenting; Rheinberger/Hagner (eds), Experimentalisierung.

77 Cf. for example Hüntelmann, History; Ash, Tiere.

78 There was and is no common or clear terminology for all research into feelings – neither in the life sciences nor in the social sciences.

79 Cf. for instance Jan Plamper, The history of emotions. An introduction, Oxford 2017, pp. 147-194; John Deigh, William James and the rise of the scientific study of emotion, in: Emotion Review 6 (2014), pp. 4-12. See also Claudia Wassmann, The science of emotion. Studying emotions in Germany, France, and the United States, 1860-1920, Diss. University of Chicago 2005.

mals when they seemed to be expressing feelings or sensations.[80] The slow collapse of this older distinction was also promoted by similar considerations within evolutionary theory – following Charles Darwin's important study on "The Expression of the Emotions in Man and Animals" from 1872.[81] Therefore, not only within but also outside of the life sciences, feelings have very often been considered as some kind of natural reaction with biological foundations in many living beings, especially in humans and at least in some other animals too.

In the following, I try to question this understanding of feelings – affects or emotions – which was of great importance for much research into feelings, which is associated, for example, with the names of Silvan Tomkins and Paul Ekman[82] and which seems to me, as will become clearer, to carry over into Camille's story and its "tentacular thinking". In this respect, I would like to confront Camille's story with a story that emphasizes the role of physiology for the idea of kinship between humans and other animals, that addresses the question of future bodies in the case of animal experiments and that focuses, in doing so, in particular on feelings: How could Camille's story be read if it does not meet indigenous rituals or ancient myths, for instance the famous story of the fantastic gorgon Medusa, but the troubling novel of the fictional physiologist Moreau?

4. When Stories Meet

"The Island of Doctor Moreau", Herbert George Wells's groundbreaking and much debated science fiction[83] was published in Great Britain in

80 Cf. for example Jed Mayer, The expression of the emotions in man and laboratory animals, in: Victorian Studies 50 (2008), pp. 399-417; Pascal Eitler, The "origin" of emotions – sensitive humans, sensitive animals, in: Ute Frevert et al., Emotional lexicons. Continuity and change in the vocabulary of feeling 1700-2000, Oxford 2014, pp. 91-117; Otniel E. Dror, The affect of experiment. The turn to emotions in Anglo-American physiology, 1900-1940, in: Isis 90 (1999), pp. 205-237. See also Boddice, Science; Boddice, Humane professions.

81 Charles Darwin, The expression of the emotions in man and animals, London 2009 (orig. 1872).

82 Cf. in particular Plamper, History, pp. 147-218. See also Ruth Leys, The ascent of affect. Genealogy and critique, Chicago 2017, pp. 26-128.

83 Herbert George Wells, The Island of Doctor Moreau, London 2005 (orig. 1896). Research on Wells is very widespread. Cf. in general Sarah Cole, Inventing tomorrow. H. G. Wells and the twentieth century, New York 2020; Simon J. James, Maps of utopia. H. G. Wells, modernity and the end of culture, Oxford 2012; Steven McLean, The early fiction of H. G. Wells. Fantasies of science, Basingstoke 2009; Patrick Parrinder, Shadows of the future. H.G. Wells, science fiction and prophecy, New York 1995; John Huntington, The logic of fantasy. H. G. Wells and science fiction, New York

1896, in the exact period in which the question of whether, how and what other animals may feel was controversially negotiated within and outside of the life sciences – especially in Great Britain and in many other parts of Western Europe and North America as well.[84] Never before have animal welfare and protest movements against animal experiments[85] gained so much public attention – strongly encouraged not least by literary imagination and the new and great popularity of animal stories at the end of the 19th century.[86]

Although Haraway shows a keen interest in literary imagination and especially in science fiction, and although Wells is considered one of the seminal founders of this manifold genre, she never seems to have engaged scientifically with him and "The Island of Doctor Moreau". This troubling novel deals with a formerly famous but now outcast physiologist at the end of the 19th century. This physiologist – Doctor Moreau – aims to make humans out of other animals with the help of bodily modifications through extensive operations, on almost all parts of their bodies, including the brain, not only but above all in the case of mam-

1982; Frank McConnell, The science fiction of H. G. Wells, Oxford 1981; Bernard Bergonzi, The early H. G. Wells. A study of the scientific romances, Toronto 1961. See also Edward James/Farah Mendlesohn (eds), The Cambridge companion to science fiction, Cambridge 2003; Eric Carl Link/Gerry Canavan (eds), The Cambridge history of science fiction, Cambridge 2019.

84 Cf. for example Jutta Buchner, Das Tier als Freund. Überlegungen zur Gefühlsgeschichte im 19. Jahrhundert, in: Paul Münch/Rainer Walz (eds), Tiere und Menschen. Geschichte und Aktualität eines prekären Verhältnisses, Wien 1998, pp. 275-294; Pascal Eitler, Tiere und Gefühle, in: Krüger et al. (eds), Tiere und Geschichte, pp. 59-77; Pascal Eitler, "Weil sie fühlen, was wir fühlen". Menschen, Tiere und die Genealogie der Emotionen im 19. Jahrhundert, in: Historische Anthropologie 19 (2011), pp. 211-228; Erika Quinn/Holly Yanacek (eds), Animals, machines, and AI. On human and non-human emotions in modern German cultural history, Berlin 2022. See also Mason Harris, Vivisection, the culture of science and intellectual uncertainty in "The Island of Doctor Moreau", in: Gothic Studies 4 (2002), pp. 99-115.

85 Cf. for instance Hilda Kean, Animal rights. Political and social change in Britain since 1800, London 1998; Diane L. Beers, For the prevention of cruelty. The history and legacy of animal rights activism in the United States, Athens 2006; Mieke Roscher, Ein Königreich für Tiere. Die Geschichte der britischen Tierrechtsbewegung, Marburg, 2009; Richard French, Antivivisection and medical science in Victorian society, Princeton 1975; Hubert Bretschneider, Der Streit um die Vivisektion im 19. Jahrhundert, Stuttgart 1962. See also Pascal Eitler, Übertragungsgefahr. Zur Emotionalisierung und Verwissenschaftlichung des Mensch-Tier-Verhältnisses im Deutschen Kaiserreich, in: Daniel Morat/Uffa Jensen (eds), Die Rationalität der Gefühle. Emotionen und Wissenschaft in der Moderne, München 2008, pp. 171-188.

86 Cf. for instance Susan McHugh, Animal stories. Narrating across species lines, Minneapolis 2011; Tess Cosslett, Talking animals in British children's fiction, 1786-1914, New York 2006; Frederike Middelhoff, Literarische Autozoographien. Figurationen des autobiographischen Tieres im langen 19. Jahrhundert, Berlin 2020.

mals. "The human shape," he boasts, "I can get now, almost with ease."[87] Like Camille, Moreau seeks at making kin with other animals – but for him this means supposedly optimizing and seemingly elevating the other animals by strongly transforming them, also with regard to their instincts or, better, feelings. He tries to remodel human-animal relationships by "burn[ing] out all the animal".[88] And Moreau succeeds not only in making the other animals look like humans, but also move and talk like humans. He conducts his animal experiments with the support of an assistant on an isolated island – not far away from Galápagos Islands. At this remote place, a rigid system of clear rules and severe punishments makes the "humanized animals" to live together with him and his assistant in a very hierarchical manner, as obedient servants of a strict master, until the moment when this social order – "the law" – suddenly collapses, and Moreau is finally killed by one of the "beast people".[89]

There are many ways to read Moreau's story – its "symbolic meanings are so richly layered that it is easy to get carried away."[90] Very often it is read in terms of how it relates to the life sciences or animal experiments per se. In this regard, Moreau's story and other works by Wells reveal some unclarities.[91] But that is not the point that this paper is about. Also, this paper is not about the point that, in contrast to Haraway, Wells does not tell a rather optimistic but rather pessimistic science fiction, since the future bodies in Camille's story rely on bodily modifications, as do the future bodies in Moreau's story.[92] In this context, I'm not concerned that Haraway openly welcomes these bodily modifications in the case of Camille while Wells seemingly dismiss them in the case of Moreau. For in Haraway's case they are at least partly voluntary, while in Wells's case they are in every respect involuntary. I'm much more concerned, as will become clearer, that Camille does not really

87 Wells, Island, p. 78.

88 Ibid., p. 78.

89 Ibid., p. 55, 60 and 71. His assistant is killed some time after Moreau. See also ibid., pp. 98-105.

90 Adam Roberts, H. G. Wells. A literary life, London 2019, p. 56.

91 Cf. in particular Jill Felicity Durey, Vivisection through the eyes of Wilkie Collins, H. G. Wells and John Galsworthy, in: Medical Humanities 47 (2020), pp. 333-343; John McNabb, The beast within. H.G. Wells, "The Island of Doctor Moreau", and human evolution in the mid-1890s, in: Geological Journal 50 (2015), pp. 383-397. See also Herbert George Wells, Popular feeling and the advancement of science. Anti-vivisection, in: Herbert George Wells, The way the world is going. Guesses and forecasts of the years ahead, London 1928, pp. 221-230; Herbert George Wells, The food of the gods and how it came to earth, London 1904, pp. 24-59.

92 See also Herbert George Wells, Bio-optimism, in: Herbert George Wells, Early writings in science and science fiction, Berkeley 1975, pp. 206-210 (orig. 1895).

deviate from the path Moreau follows, even if Camille goes in the opposite direction.

Much research within and outside of animal studies has carefully analyzed how "The Island of Doctor Moreau" deals with the various relations between different species – between humans and other animals – as extremely ambiguous or inherently ambivalent.[93] I would like to take a step back and shift that focus – because Moreau's story really raises the question of whether at least some of the "beast people" are already a human.[94] In this sense, this is a crucial point, this troubling novel is less about different species as something given than about different bodies as something made.[95] Therefore, this paper will ask how this science fiction deals with the social production of different bodies as socially productive.

In Moreau's story, I have the impression, Wells negotiates the "plasticity" of bodies and the great role that animal experiments play not only when it comes to identifying and explaining, but also using and shaping the biological similarities between humans and other animals as evolutionary relatives.[96] This troubling novel is not only a provocative satire.[97] It is also a kind of thought experiment and in many ways fully in line with the life sciences of this specific period.[98] In this respect, Moreau is much more than a "mad scientist" and this science fiction is much more than a fundamental critique of the life sciences or animal

93 Cf. for example Anna Neill, Human evolution and fantastic Victorian fiction, New York 2021; Ronald Edwards, Edge of evolution. Animality, inhumanity, and Doctor Moreau, Oxford 2016; Greta Colombani, Humanity as a performance in H. G. Wells's "The Island of Doctor Moreau", in: Whatever 3 (2020), pp. 137-156; Sherryl Vint, Animals and animality from the island of Moreau to the uplift universe, in: The Yearbook of English Studies 37 (2007), pp. 85-102. See also McNabb, The beast.

94 For a while, this science fiction even raises the question of whether the "beast people" are vivisected humans. See also the informative discussion in Bruce Clarke, Posthuman metamorphosis. Narrative and systems, New York 2008, pp. 54-59.

95 This is the reason, I would like to suggest, why this science fiction is fruitfully discussed within disability studies as well. In this context, the question is whether the "beast people" are "disabled humans". Cf. in particular Aneliese Farris, 'What on earth was he – man or animal?' Posthuman permeability in H. G. Wells's The Island of Doctor Moreau, in: Canadian Journal of Disability Studies 9 (2020), pp. 130-156.

96 Wells, Island, pp. 71 and 75. See also Herbert George Wells, The limits of individual plasticity, in: Wells, Early writings, pp. 36-39 (orig. 1895).

97 This paper is not the place to go into the role of Jonathan Swift's fantasy fiction about Gulliver's travels from 1726. See also Bergonzi, Wells, pp. 90-112; McConnell, The science fiction, pp. 102-105; John R. Hammond, The island of Doctor Moreau. A Swiftian parable, in: The Wellsian 16 (1993), pp. 30-41.

98 Cf. for instance Thomas Macho/Annette Wunschel (eds), Science & Fiction. Über Gedankenexperimente in Wissenschaft, Philosophie und Literatur, Frankfurt 2004. See also Chris Danta, The future will have been animal. Dr Moreau and the aesthetics of monstrosity, in: Textual Practice 26 (2012), pp. 687-705.

experiments, of physiology or biology.[99] Wells's great literary imagination was driven, not least, by certain scientific knowledge. He had published a text-book on biology a few years before this troubling novel and studied biology and zoology with Thomas Henry Huxley, one of the greatest and most prominent defenders of animal experiments and evolutionary theory in Great Britain at the end of the 19th century.[100] Against this background, Moreau's story is very clearly a very early "post-Darwinian" science fiction – an "evolutionary fable" that sets near Galápagos Islands for good reasons.[101]

However, not only the publication, but also the reception of "The Island of Doctor Moreau" was strongly influenced by evolutionary theory, positively or negatively. In this regard, this science fiction has been read again and again for a specific, supposedly formative, motif – the seemingly hidden or threatening animal in every human.[102] I would like to suggest reading this troubling novel differently. In this "evolutionary fable", Wells is not so interested in the distant past as much as in the future bodies of humans and other animals.[103] It seems to me that he isn't speculating about what could happen if some kind of animal were to erupt inside humans, this is much more the issue of Robert Louis Stevenson's famous story about Doctor Jekyll and Mister Hyde from 1886.[104] Stevenson deals with the idea of "animalized humans", in contrast, Wells deals with the idea of "humanized animals". He speculates about what it could mean that humans make kin with other animals more and more and what could happen if humans try to make humans out of other animals.

99 Cf. for example Harris, Vivisection, pp. 100ff; McLean, The early fiction, pp. 46-49; McConnell, The science fiction, pp. 92-98; Neill, Human evolution, pp. 79-93. Cf. in contrast, for example, Anne Stiles, Literature in "Mind". H. G. Wells and the evolution of the mad scientist, in: Journal of the History of Ideas 70 (2009), pp. 317-339.

100 Herbert George Wells, Text-book of biology, London 2016 (orig. 1893). See also Herbert George Wells et al., The science of life, New York 1934 (orig. 1929).

101 See also McConnell, The science fiction, pp. 69ff. and 94; Neill, Human evolution, pp. 79ff.; Bergonzi, Wells, pp. 100ff.; Carrie Rohman, Stalking the subject. Modernism and the animal, New York 2008, p. 64. Cf. in particular Virginia Richter, Literature after Darwin. Human beasts in western fiction 1859-1939, London 2011, pp. 99-106; Chris Danta, Animal fables after Darwin, Cambridge 2018, pp. 96-128.

102 Cf. in particular Patrick Parrinder/John Partington (eds), The reception of H. G. Wells in Europe, London 2005. This motif also shapes much research on "The Island of Doctor Moreau".

103 This is also true for other novels of this period. Cf. for example Herbert George Wells, The time machine, London 2005 (orig. 1895); Herbert George Wells, The invisible man, London 2005 (orig. 1897). See also Wells, The food of the gods.

104 Robert Louis Stevenson, The strange case of Dr Jekyll and Mr Hyde, Oxford 2008 (orig. 1886). Cf. in contrast, for example, Robert M. Philmus, The satiric ambivalence of "The Island of Doctor Moreau", in: Science Fiction Studies 8 (1981), pp. 2-11.

In this regard, Doctor Moreau has also little in common with Mary Shelley‘s even more famous story about Doctor Frankenstein from 1818.[105] While Frankenstein aims to really create living beings, Moreau only seeks to strongly transform them. Frankenstein‘s problem is living – Moreau‘s problem, as will become clearer, is feeling. Fascinated by Frankenstein, the history of the body has paid a lot of attention to circulating ideas about artificial humans and human motors or human-machine analogies, which continued to advance in the second half of the 19th century.[106] In comparison, simultaneous ideas about evolutionary relatives or companion animals and human-animal relationships have received too little attention for too long.

Not in the same way but to the same extent as Haraway, Wells is interested in the multispecies possibilities of future bodies and what it could be like to become more and more related. He deals with the "plasticity" of bodies – not through genetics but through physiology – and asks what humans could try to make out of and with the life sciences and evolutionary theory.[107] In this respect, Moreau’s story draws attention to two things: First, it shows very early that it was nearly always the other animals that had to test and prove the idea of kinship between humans and other animals with reference to certain alleged biological foundations; second, this troubling novel about a master and his servants shows very clearly that it was nearly always the other animals that had to make this kinship more shapeable and comfortable with regard to very different technical improvements – more shapeable and comfortable for the human protagonists. In this context, this "evolutionary fable" may help to seriously take into account that this type of "border trouble" constantly involves serious dangers – for some much more than for others. Not only inventing and deepening, but also shifting or denying the seemingly clear border between humans and animals has cost billions of these animals their lives and caused all sorts of pain. And Moreau’s story shows very early and very clearly what humans could try to make with and out of other animals, not although, but just insofar as they are viewed as evolutionary relatives.

105 Mary Shelley, Frankenstein. The modern Prometheus. 1818 text, Oxford 2008 (orig. 1818). Cf. in contrast, for example, Jon Turney, Frankenstein‘s footsteps. Science, genetics and popular culture, New Haven 1998, pp. 56-59.

106 Cf. for instance the important studies of Anson Rabinbach, Jakob Tanner, Philipp Sarasin, Jessica Riskin, Maren Möhring, Iwan Rhys Morus or Karin Harrasser. See also Iwan Rhys Morus (ed.), Bodies/Machines, Oxford 2002; Barbara Orland (ed.), Artifizielle Körper – lebendige Technik. Technische Modellierungen des Körpers in historischer Perspektive, Zürich 2005; Karsten Uhl/Christian Zumbrägel (eds), Technik = Body Politics 6 (2018) No. 9.

107 Wells, Island, p. 71. See also Wells, Limits, p. 36.

For this reason, upholding the usefulness of creating such cenes, I would like to problematize Haraway's manifold reflections on making kin in the Chthulucene that is supposedly already starting in confrontation with some much less ambitious reflections on – what I would like to call – the Moreaucene that seems to be going on.[108] In accordance with the concept of the Chthulucene, the concept of the Moreaucene does not presume absolute dominance of humans per se. For many areas of modern societies, social order and social change can only be adequately understood if other animals – as relevant potential or actual actors – are seriously included in the analysis.[109] In contrast to the concept of the Chthulucene, however, the concept of the Moreaucene aims only at human-animal relationships and does not develop broader reflections on all animals or other "beings of the earth" and their multiple interweavements – in this respect, it is much more modest than the concept of the Chthulucene or the concept of the Anthropocene. It tries to make it possible "to tell big-enough stories".[110] But it offers no general approach or political response to the global crisis or modern societies and capitalist economies.[111] And although it is by no means solely devoted to the analysis of the past or the present of human-animal relationships, but also to its critique, the concept of the Moreaucene does not really offer a vision for their future. It deals with a specific period – not with an alternative project.

From this point of view, I would like to suggest, the Moreaucene is characterized by the historical fact that since the second half of the 19th century more and more humans consciously and purposefully try to bodily modify[112] and supposedly optimize more and more other animals, not only, but above all in Western Europe and North America; these bodily modifications primarily refer to the changing scientific knowledge of the booming life sciences about humans and other animals and their kinship; in this sense, the idea of kinship between humans and other animals lies not only at the very heart of the Chthulucene, but also

108 Critique on creating such cenes is crucial. Cf. for example the informative discussion in Andrew Curley/Sara Smith, The cene scene. Who gets to theorize global time and how do we center indigenous and black futurities?, in: Environment and Planning E 7 (2024), pp. 166-188.

109 This is also true for so-called premodern societies, but it is not true for all areas of so-called modern societies to the same extent.

110 Haraway, Staying, p. 50.

111 At this point, I have to ignore Haraway's manifold reflections on, and critical discussion of, the concept of the Capitalocene. Cf. for instance Haraway, Staying, pp. 99-103. See also Jason Moore (ed.), Anthropocene or Capitalocene? Nature, history, and the crisis of capitalism, Oakland 2016.

112 In this context, not only Haraway but also Wells speaks of "modify". Cf. for instance Wells, Island, pp. 72f.; Wells, Limits, pp. 36 and 38.

at the very heart of the Moreaucene; this idea opens a path to remodel human-animal relationships in many different ways. Whether it is creating a new breed, increasing the milk production or giving a special antibiotic, whether it is the therapy of a horse's stress, the arrangement of an ape's cage or the transplantation of a pig's heart, whether it is muesli for dogs, yoga for cats or drugs for rats: Other animals, especially mammals, are very often bodily modified and supposedly optimized in relation to humans as evolutionary relatives that are apparently sharing important similarities, not only, but above all biological similarities. In this regard, this idea of kinship is deeply embedded in the hegemonic position that humans very often take towards other animals. Moreau pushes this idea to its limits – where biological similarities between humans and other animals are used and shaped to such an extent that biological differences finally begin to fade away.

Of course, there were bodily modifications to other animals long before. But with the emergence or establishment of the life sciences and intensified farming, the beauty industry and pet keeping, the circus and the zoo, in the face of increasing urbanization and in the shadow of growing industrialization, these have reached a completely new level in the second half of the 19th century, both quantitatively and qualitatively.[113] Never before have so many humans tried to bodily modify and supposedly optimize so many other animals in such a profound and varied manner, comparing their strength and growth, their health and weight, their age and sex.[114] In this sense, making kin in the Moreaucene means, first and foremost, that many animals are largely adapted to the

113 Cf. for example Harriet Ritvo, The animal estate. The English and other creatures in the Victorian age, Cambridge 1987; Kathleen Kete, The beast in the boudoir. Petkeeping in nineteenth-century Paris, Berkeley 1994; Jutta Buchner, Kultur mit Tieren. Zur Formierung des bürgerlichen Tierverständnisses im 19. Jahrhundert, Münster 1996; Philip Howell, At home and astray. The domestic dog in Victorian Britain, Charlottesville 2015; Amir Zelinger, Menschen und Haustiere im Deutschen Kaiserreich. Eine Beziehungsgeschichte. Bielefeld 2018; Chris Pearson, Dogopolis. How dogs and humans made modern New York, London, and Paris, Chicago 2022; Philip Howell et al. (eds), Animal history in the modern city. Exploring liminality, London 2019; Clay McShane/Joel Tarr, The horse in the city. Living machines in the nineteenth century, Baltimore 2007; Paula Young Lee (ed.), Meat, modernity, and the rise of the slaughterhouse, Durham 2008; Veronica Settele, Deutsche Fleischarbeit. Geschichte der Massentierhaltung von den Anfängen bis heute, München 2022; Nigel Rothfels, Savages and beasts. The birth of the modern zoo, Baltimore 2012; Christina Wessely, Künstliche Tiere. Zoologische Gärten und urbane Moderne, Berlin 2008; Abigail Woods et al., Animals and the shaping of modern medicine. One health and its histories, Basingstoke 2018. See also Beat Bächi (ed.), Geschichte in Gummistiefeln = Body Politics 11 (2023) No. 15.

114 See also Benjamin Bühler/Stefan Rieger, Vom Übertier. Ein Bestiarium des Wissens, Frankfurt 2006; Hüntelmann, History; Guerrini, Experimenting; Roelcke, Tiermodell.

social demands of certain humans – in terms of their behavior, but also with regard to their bodies: The bodily modifications of other animals are meant to offer certain humans specific advantages. Which explicitly does not mean that these animals make no social demands to these humans, at least to some degree.

The concept of the Moreaucene emphasizes that humans come into existence and act within a complex network of diverse relations to other beings – above all in direct confrontation or in direct collaboration with other animals. But it insists that humans very often take a hegemonic position, not absolute dominance, towards other animals. The concept of the Moreaucene tries to point out that most animals that most humans usually and consciously encounter or interact with – in the context of this paper, I would prefer not to say intraact with[115] – are already influenced to a great extent by many humans, which doesn't apply the other way around to the same extent. Not only, but especially in Western Europe and North America since the second half of the 19th century, animals that are recognized and utilized by humans have mostly been bodily modified and supposedly optimized by humans in many different ways, bred differently, fed differently, treated differently, replaced differently.[116]

These animals are largely adapted to the social demands of certain humans, not only when they are milked or skinned, but also when they are nursed or loved. In this sense, the concept of the Moreaucene is not so much about the human domination of any animals[117] in the narrower sense, but much more about the social production of some animals in the broader sense.[118] Whereas the notion of human domination seems to presume different species as something given, the notion of social production seeks to consider different bodies as something made. Within human-animal relationships, humans not only make something with, but also something out of other animals, and – although they are

115 Different issues require different tools. On the concept of intraaction cf. in particular Barad, Performativity; Barad, Meeting.

116 On the history of breeding cf. for example Ritvo, The animal estate, pp. 45-121; Buchner, Kultur, pp. 97-122; Michael Worboys et al., The invention of the modern dog. Breed and blood in Victorian Britain, Baltimore 2018; Margaret Elsinor Derry, Horses in society. A story of animal breeding and marketing, 1800-1920, Toronto 2006. See also Neil Pemberton et al., Breeding and breed, in: Kean/Howell (eds), Companion, pp. 393-421.

117 Cf. in contrast Weisberg, The broken promises. This paper is not the place to adequately consider the manifold reflections of Yi-Fu Tuan. Cf. in particular Yi-Fu Tuan, Dominance and affection. The making of pets, New Haven 1984.

118 In this regard, this paper does not aim to darken and weaken current debates about fundamental changes within human-animal relationships, but to deepen and sharpen them – scientifically and politically.

very often in a hegemonic position[119] – they also make something with and out of other humans and with and out of themselves. Thus, within an ongoing repetition of unstable materializations in everyday practices, these humans and other animals are in their very concrete modes of existence always a certain "state of the social".[120]

While the concept of the Moreaucene is arguing against anthropocentrism, insofar as that is possible, the period of the Moreaucene is permeated by it. And in this respect, anthropocentrism is much more than a phantasm that merely represents humans in some aspects quite differently from other animals, it is also a phantasm that socially produces other animals in some aspects quite similarly to humans: Anthropocentrism and anthropomorphism often go hand in hand.[121] Moreau tries not only to permanently control the animals' feelings, but also his own feelings – and thereby he subjects not only himself, but also the other animals to common stereotypes about sovereignty or assertiveness, masculinity and straightness.[122] Also in this regard, I would like to suggest, Wells speaks of "humanized animals".

While Haraway chooses the term Chthulucene despite the different problems lurking deep within its historical semantics, I would like to propose the term Moreaucene just because of the specific problems emerging openly from its historical semantics: For it is fruitful to reflect that humans "have never been human", but it is also important to reconstruct how humans have tried to be; it is fruitful to remember that humans "are liminanimals too", but it is also important to research what humans have done not to be.[123]

119 I prefer the notion of hegemonic position also because it has no connotations of sadism or, better, of BDSM. To speak of human sadism in the case of animal experiments misses not only the character of animal experiments, but also current definitions of BDSM. Cf. in contrast Weisberg, The broken promises.

120 Also in this sense, emphasizing materializations is something else than stressing materiality. Cf. in contrast, for example, Richard York/ Stefano Longo, Animals in the world. A materialist approach to sociological animal studies, in: Journal of Sociology 53 (2017), pp. 32-46.

121 Cf. for instance Rob Boddice (ed.), Anthropocentrism. Humans, animals, environments, Boston 2011; Claire Parkinson, Animals, anthropomorphism, and mediated encounters, New York 2020. See also Gary Steiner, Anthropocentrism and its discontents. The moral status of animals in the history of Western philosophy, Pittsburgh 2005; Lorraine Daston/Gregg Mitman (eds), Thinking with animals. New perspectives on anthropomorphism, New York 2006.

122 Not only does he subject the other animals to extensive operations without anesthesia, he also stabs himself with a knife in the leg without anesthesia – to show he is able to permanently control his own feelings. Wells, Island, p. 74.

123 Nicholas Gane, When we have never been human, what is to be done? Interview with Donna Haraway, in: Theory, Culture & Society 23 (2006), pp. 135-158; Philip Howell, The trouble with liminanimals, in: Parallax 25 (2019), pp. 395-411, p. 406.

Wells's "post-Darwinian" science fiction helps to exhibit anthropocentrism. Haraway's "post-Darwinian" science fiction, in contrast, tries to reverse anthropocentrism, also insofar as in Camille's story, after all, it's humans who try to transgress the supposed border between humans and animals. The future bodies Haraway is dealing with especially contain aesthetic variations or sensual extensions, but these bodily modifications not only somehow put humans at the center again, they are also meant to offer the human protagonists[124] specific advantages – not disadvantages. The bodily modifications which the first and the second Camille experience are expressly intended to supposedly optimize them.[125] In this sense, Camille's feelers aim to increase and intensify Camille's feelings – "so that more vivid tasting of the flying insects' worlds could become the heritage of the human partner too, helping in the work and adding to the corporeal pleasures".[126] Thus, it seems to me that Camille's story unintentionally reproduces the social demands being characteristic for – what I would like to call – the Moreaucene. Like Moreau, Camille negotiates the "plasticity" of bodies and the multispecies possibilities of future bodies in order to remodel human-animal relationships. In this case, the bodily modifications only seem to target certain humans, but the genetic engineering Haraway is dealing with is based on animal experiments – on their long history and unthemed continuity. Against this background, Camille's feelers are deeply embedded in the hegemonic position that humans very often take towards other animals.

Even if Camille goes in the opposite direction, in this sense, Camille does not really deviate from the path Moreau follows. From this point of view, the Chthulucene has not started yet – but the Moreaucene seems to be going on.

5. Feelers, Feelings and the History of the Body

In this context, feelers and feelings play a crucial role for Camille's story and its "tentacular thinking". Haraway explains "that tentacle comes from the Latin tentaculum, meaning 'feeler,' and tentare, meaning 'to feel' and 'to try'."[127] Feelings are of great interest in many posthumanist speculations and in many posthumanist theories as well – quite often in

124 Humans are clearly the protagonists in Camille's story – not monarch butterflies or other animals.

125 Haraway even speaks of "enhanced" – "Camille 1's gut and mouth microbiomes were enhanced". Haraway, Staying, p. 148.

126 Ibid., p. 152.

127 Ibid., p. 31.

a very traditional sense, making use of the binary distinction between rational and emotional.[128]

With regard to Camille‘s story, I have the impression, Haraway assumes that feelings – emotions or affects – are some kind of natural reaction with biological foundations which can be improved technically through genetic engineering. But getting the feelers of a butterfly does not mean feeling like a butterfly. You don't feel or sense, taste or smell like a butterfly seems to do because you have been bodily modified through genetic engineering. Perhaps someday you can easily implant feelers – but you cannot easily implant feelings or "corporeal pleasures". There seems to be no direct link between feelers and feelings or senses and sensations. From a body history perspective, it is not fruitful to view feelings in this way – as a natural reaction with biological foundations which can be improved technically. In this context, it is noticeable that Haraway doesn't seem to be particularly interested in neither emotion research nor affect studies, although affect studies are loosely connected with animal studies and closely entangled with posthumanist speculations or posthumanist theories.[129]

Against the background of ongoing discussions in emotion research, primarily on the part of many historians or anthropologists and on the part of some neuroscientists and psychologists as well, it seems to be more fruitful to understand feelings as everyday practices or as momentary effects of everyday practices. In this sense, feelings are a form or a result of something that somebody does or tries to do, a temporary state of bodily excitement or bodily relaxation that is defined differently, that is interpreted differently, that is expected differently, that is learned differently, that is performed differently and that is very difficult to sustain or guarantee.[130] In their very concrete modes of exis-

128 Cf. for example Braidotti, The posthuman, p. 78. Braidotti stresses that she "identifies in emotions, rather than in reason, the key to consciousness."

129 Cf. for instance Michael Richardson, Embodiment and affect, in: Sherryl Vint (ed.), After the human. Culture, theory and criticism in the 21st century, Cambridge 2020, pp. 58-71. Cf. in general Patricia Ticineto Clough/Jean Halley (eds), The affective turn. Theorizing the social, Durham 2007; Melissa Gregg/Gregory J. Seigworth (eds), The affect theory reader, Durham 2010. See also Brian Massumi, Parables for the virtual. Movement, affect, sensation, Durham 2002; Brian Massumi, What animals teach us about politics, Durham 2014.

130 Cf. in particular Plamper, History, pp. 98-145 and 251-269. See also Daniela Saxer, Mit Gefühl handeln. Ansätze der Emotionsgeschichte, in: Traverse. Zeitschrift für Geschichte 14 (2007), pp. 15-29; Pascal Eitler/Monique Scheer, Emotionengeschichte als Körpergeschichte. Eine heuristische Perspektive auf religiöse Konversionen im 19. und 20. Jahrhundert, in: Geschichte und Gesellschaft 35 (2009), pp. 282-313; Monique Scheer, Are emotions a kind of practice (and is that what makes them have a history)? A Bourdieuian approach to understanding emotion, in:

tence, I would like to argue, feelings are always and above all socially produced in many different ways – framed, perceived, aquired, shaped, trained, fought, refined, irritated, forgotten within various relations with other humans, other animals and many other beings. From this point of view, Moreau's story exhibits an important shift from Camille's story and its hidden assumptions about supposed feelings.

In this "evolutionary fable", Wells does not depict the fear of a supposedly hidden or threatening animal in every human, but the attempt to ruthlessly force and permanently control what is allegedly lurking in that animal – its instincts or, better, its feelings. Moreau saws up bones, cuts tendons, forms muscles, he doesn't have any problems subjecting the other animals to extensive operations without anesthesia – but he is very concerned about their feelings as "a strange hidden reservoir to burst suddenly". In this sense, Moreau's problem is feeling – not living. Reproducing the binary distinction between rational and emotional, making humans means for Moreau to make "a rational creature". Yet, he doesn't manage to totally eliminate the basic capacity of the other animals to feel, although he tries very hard to clearly localize the possible seat of the feelings in the body, in the brain.[131] And it is precisely in this respect that this science fiction places feelings at the center of interest – the feelings of other animals and, thereby, the feelings for other animals.[132]

In this regard and far more than Camille's story, Moreau's story may help to better understand that human-animal relationships in modern societies have not simply become increasingly contradictory – with animal experiments or cattle cars on the one side and lovely pets or animal welfare on the other. Moreau's story may help to adequately consider not only that billions of animals have been used – caged and killed – in animal experiments, but also how some animal experiments confronted first the life sciences and finally the wider public with the idea that not only humans, but at least some other animals can and do feel too. In this sense, human-animal relationships have not simply become increasingly contradictory.

Many researchers within animal studies in general, and within animal history in particular, describe human-animal relationships as inherently ambivalent or in their essential dialectic between processes of commodification on the one hand and processes of emotionalization on the other – whereby emotionalization is treated as a reaction to commode-

History and Theory 51 (2012), pp. 193-220. Cf. for example Lisa Feldman Barrett, How emotions are made. The secret life of the brain, London 2017.

131 Wells, Island, p. 78. See also Eitler, The "origin", pp. 91f.

132 Wells, Island, pp. 73ff. and 37f.

fication. But commodification and emotionalization are not necessarily contradictory, thus, there is no essential dialectic.[133] And to understand inherent ambivalence as "the fundamental finding" about "the human-animal relationships" in modern societies[134] is to reproduce the seemingly clear border between humans and animals more than necessary – for it opposes humans with all other animals and insists, in this regard, on different species. Yet, humans relate very differently towards other animals, thus, not all human-animal relationships are inherently ambivalent, but only some of them, in a specific period, to a certain degree. And humans relate very differently not only towards other animals, but also towards other animals of the same species – not because all human-animal relationships are inherently ambivalent, but because everybody within these relationships is socially produced. In modern societies other animals of the same species can be bodily modified and supposedly optimized in many different ways – although they belong to the same species, they are not the same "state of the social". In the second half of the 19th century, for example, dogs were confronted with very different social demands – as family animals, daily consumables, working animals, luxury goods.[135]

In this sense, we should not insist on different species, but focus on different bodies. When we try to understand the social production of different bodies as socially productive, the emotionalization of human-animal relationships – especially since the second half of the 19th century – is much more than a reaction at their commodification. Moreau's story may help to better understand that it has its very own history.[136] It did not concern all other animals in the same way or to the same extent, and it is less necessary to investigate in which areas of modern societies many humans apparently ignored the possible feelings of other animals. It is of greater importance to reconstruct how more and more humans – especially since the second half of the 19th century – have come up with the idea that not only humans, but at least some other animals can and do feel too. And what was made of this idea? How did this emotionalization of animals drive and shape the emotionalization of human-animal relationships – or vice versa? And how did

133 Cf. for instance the important studies of Eva Illouz.

134 My translation of Clemens Wischermann, Tiere und Gesellschaft. Menschen und Tiere in sozialen Nahbeziehungen, in: Krüger et al. (eds), Tiere und Geschichte, pp. 105-126, p. 121.

135 Cf. for example Buchner, Kultur mit Tieren; Howell, At home; Zelinger, Menschen und Haustiere; Pearson, Dogopolis. See also Pascal Eitler, Ambivalente Urbanimalität. Tierversuche in der Großstadt (Deutschland 1879-1914), in: Informationen zur modernen Stadtgeschichte 40 (2009), pp. 80-93.

136 See also Buchner, Das Tier als Freund; Eitler, Tiere und Gefühle.

humans and other animals generate and utilize a variety of feelings – in the physiological laboratory or on the street, in the living room or at the zoo?[137]

The animals' feelings in Moreau's story that finally appear to "burst" are not simply the feelings of just any animal. Their suggested feelings – above all fear and hate – can be traced primarily to their painful treatment during their bodily modifications and afterwards under "the law". Thus, in their very concrete modes of existence, the animals' feelings in Moreau's story are socially produced.[138] At this point, one can read this troubling novel in two ways: One can stress that Moreau fails in his attempt to totally eliminate the basic capacity of the "beast people" to feel; as an effect, he is finally killed by one of them; but one can also emphasize how successful Moreau is in temporarily controlling the animals' feelings within a certain social order – through a rigid system of clear rules and severe punishments; and just because their feelings are socially produced it is not possible to permanently control them.

In this regard, from a body history perspective with genealogical intent, it is not fruitful to view feelings as some kind of natural reaction with biological foundations – neither in the case of humans nor in the case of other animals.[139] Very often living beings, especially humans and other animals, are ascribed as having the basic capacity to feel, yet, we may not simply conclude from this basic capacity to a specific ability.[140] The question then is not under what general conditions humans or other animals can feel anything, but under what particular conditions humans or other animals do feel something – something specific for specific reasons, in different forms, with different effects.

However, bodies do not need to feel to come into view. Likewise, it is not fruitful to view feeling and living as almost equivalent, as not only some researchers from the life sciences seem to suggest, but also as some researchers in the social sciences seem to propose.[141] The history

137 The history of the zoo may be a good example. Cf. for instance Nastasja Klothmann, Gefühlswelten im Zoo. Eine Emotionsgeschichte 1900-1945, Bielefeld 2015; Rothfels, Savages; Wessely, Künstliche Tiere.

138 See also Carrie Rohman, Burning out the animal. The failure of enlightenment purification in H. G. Wells's "The Island of Dr Moreau", in: Mary S. Pollock/Catherine Rainwater (eds), Figuring animals. Essays on animal images in art, literature, philosophy, and popular culture, Basingstoke 2005, pp. 121-34, p. 129.

139 Cf. in general Eitler/Scheer, Emotionengeschichte.

140 See also the informative discussion in Evan Thompson, Could all life be sentient?, in: Journal of Consciousness Studies 29 (2022), pp. 229-265.

141 In the social sciences, this view was promoted mainly by affect studies, but it was also supported elsewhere. Cf. for example Lisa Blackman/Mike Featherstone, Revisioning Body & Society, in: Body & Society 16 (2010), pp. 1-5, p. 4. In this sense, Lisa Blackman and Mike Featherstone claim that "the paradigms of both life and affect

of the body is based neither on feeling nor on living. Accordingly, bodies do not need to live to come into view. What the social sciences can observe scientifically – with their different methods and specific data – is only that bodies are mostly viewed as living beings. Therefore, it seems reasonable to distance the history of the body from any kind of new vitalism.[142] And it seems reasonable too not to reduce animal studies in general or animal history in particular to some kind of animate history.[143] The social sciences are not only about living beings, thus, we should not replace the concept of the social with the concept of the living.[144] Also in this regard, this paper tries to decenter not only humans but other animals as well – in a symmetrical sense.[145]

The history of the body does not start from humans or other animals, but from bodies that are in their very concrete modes of existence socially produced in many different ways. A great variety of social demands is made on them – about their appearance and their actions – in order to be considered as humans or other animals, in order to be signified as actors or veritable persons, in order to be accepted as raising own claims and receiving own rights.[146] And these claims and rights can also be taken away again – from humans and other animals, partially or even completely. Against this background, it is not so much different species as something given but rather different bodies as something made that is at the center of interest.[147]

For this reason, this paper aims not at better understanding relations of relatives, but everyday practices which socially produce so-called humans as different humans and so-called animals as different animals which may be socially productive whether they do relate or don't relate as evolutionary relatives.

break down the distinction between humans and other life forms […]." Cf. for instance Joanna Latimer/Mara Miele, Naturecultures? Science, affect and the non-human, in: Theory, Culture & Society 30 (2013), pp. 5-31.

142 For a balanced critique cf. in particular Thomas Nail, What's the matter with life?, in: Stephen E. Wilmer et al. (eds), Life in the posthuman condition. Critical responses to the Anthropocene, Edinburgh 2023, pp. 241-260. Cf. in contrast, for example, Jane Bennett, Vibrant matter. A political ecology of things, Durham 2010.

143 Misleading in this regard for example: Gesine Krüger/Aline Steinbrecher/Clemens Wischermann, Animate history. Zugänge und Konzepte einer Geschichte zwischen Menschen und Tieren, in: Krüger et al. (eds), Tiere und Geschichte, pp. 9-34.

144 Cf. in contrast, for example, the informative discussion in Markus Schroer, Geosoziologie. Die Erde als Raum des Lebens, Berlin 2022, pp. 13-35 and 586-592.

145 On this symmetrical sense cf. in general Latour, We have never been modern, pp. 95ff.; Latour, Reassembling the social, pp. 76ff.

146 This is what body history tries to show for some time, it is time to show it for animal history as well. See also Eitler, Animal history; Howell, The triumph.

147 At this point, I have to ignore the ongoing debate about the concept of species within the life sciences.

6. Some conclusions

I have the impression, Haraway does not really elaborate on what humans and other animals – their past, present or future bodies – exactly have in common as evolutionary relatives. Do they have more in common than being “beings of the earth”? But what distinguishes a butterfly from an armchair in this case? It almost has become a kind of reflex to refer to "the mortality and vulnerability that we [humans and other animals] share".[148] But what exactly do such basal definitions explain? How do they really help to better understand the very diverse and sometimes remarkable changes in humans or other animals and their various relations?

In her alternative project of making kin with other animals, Haraway is implicitly referring to the qualities to live and to feel, to move or to sense.[149] It is primarily these qualities that seem to demonstrate a lot of similarities between humans and other animals or their bodies. But is it really fruitful to refer to these qualities? What about humans or other animals whose ability to sense is severely reduced, whose ability to move has almost disappeared, who can barely feel, who no longer live, who die before birth or who are in coma? In such a case, in which fewer and fewer similarities can be described, do the humans or other animals in question no longer deserve political solidarity? Don't they have any claims, don't they have any rights? Haraway doesn‘t suggest that, she tries to multiply and intensify the similarities among and between humans and other animals – and all "chthonic ones" on planet earth as a complex ecological system.

However, by stressing the idea of kinship and promoting the relations of relatives, Haraway seems to underestimate the importance she thereby gives to similarities. The idea of kinship, I would like to argue, is problematic not only when it draws on biological parenthood, linear descent and traditional family role models, which Haraway questions for good reasons.[150] This idea is also problematic because it always relies on alleged similarities that are apparently shared among relatives. And I have the impression that everybody who thinks in terms of kinship

148 Cf. for instance Wolfe, Posthumanism, p. 74; Nayar, Posthumanism, p. 109. See also Franklin Ginn, Posthumanism, in: Lynn Turner/Undine Sellbach/Ron Broglio (eds), The Edinburgh companion to animal studies, Edinburgh 2018, pp. 413-429; Susan McHugh, Animals, in: Vint (ed.), After the human, pp. 105-119; James Stanescu, Species trouble. Judith Butler, mourning, and the precarious lives of animals, in: Hypatia 27 (2012), pp. 567-582. Cf. in contrast, for example, the informative discussion in Braidotti, The posthuman, pp. 63-101.

149 This is the reason why migration and mediality play such a role in her study.

150 Cf. for instance Haraway, Staying, pp. 5f. and 216.

always thinks they share important similarities with their relatives much more than with others, not only, but above all biological similarities.[151]

Camille's story is focusing so much on biological similarities because these make bodily modifications through genetic engineering possible and calculable. But in this context, Haraway seems to link the question of political solidarity to the question of biological similarities – that easily harbors the risk of biopolitical hierarchies, for example between beings who may or may not have the qualities to live or feel. Haraway knows that, in Camille's story she is dealing with this risk quite openly.[152] Facing the serious dangers of a global crisis, growing populations and climate changes, she seems to take this risk.

In contrast, the body history perspective this paper is based on lacks any kind of such a global crisis perspective – because in their very concrete modes of existence, future bodies won't be, and present bodies are not, per se more endangered or dangerous than past bodies were. And from this lack this paper tries to draw some conclusions. Perhaps we should not look for more and more biological similarities, but instead make biological differences less and less important and derive no claims or rights from either the one or the other – and in this regard we may not refer to the life sciences. Thus, I would like to argue, fundamental changes within human-animal relationships are less about basal definitions and much more about complicated decisions.[153]

At this point, I am not concerned with critically discussing the life sciences or genetic engineering per se, I only question Haraway's alternative project of making kin with other animals. This paper problematizes the idea of kinship between humans and other animals by demonstrating in how far it is deeply embedded in the hegemonic position that humans very often take towards other animals. Problematizing this idea from a body history perspective does not mean ignoring it from an evolutionary theory perspective. This paper does not argue against interdisciplinarity or transdisciplinarity, but all scientific disciplines should

151 In this sense, Janet Carsten speaks of kinship as a way in which humans "create similarit[ies] or differenc[es] between themselves and others." Janet Carsten, After kinship, Cambridge 2004, p. 82.

152 Cf. for example Haraway, Staying, p. 149.

153 See also the informative discussion in Eva Haifa Giraud, What comes after entanglement? Activism, anthropocentrism and an ethics of exclusion, Durham 2019. On the level of everyday practices, the concept of the Zoopolis – with all its various problems – is perhaps a political response that is more fruitful than the concept of the Chthulucene. Cf. in particular Sue Donaldson/Will Kymlicka, Zoopolis. A political theory of animal rights, Oxford 2013. For a balanced critique cf. for example Dinesh Joseph Wadiwel, Zoopolis. Challenging our conceptualization of political sovereignty through animal sovereignties, in: Dialogue 52 (2013), pp. 749-758.

be made as strong as possible.[154] How else could we weigh up their potential strengths and come up with something mediating? What the social sciences can observe scientifically – with their different methods and specific data – is not that humans and other animals are evolutionary relatives, but, for example, what humans do when they make this idea of kinship the basis of their hegemonic position towards other animals: What path do we follow when we tell that story?

Billions of animals that have been used – caged and killed – in the long history of animal experiments show what humans try to make with and out of other animals, not although, but just insofar as they are viewed as evolutionary relatives. Yet, you can think of humans as animals and you can aim for fundamental changes in human-animal relationships without stressing the kinship between them.[155] You don't have to be kin and you don't have to make kin in order to be kind.[156] Haraway doesn't claim that, she doesn't give strict orders, she makes thoughtful suggestions, in her manifold reflections she explores new relationships and recalls forgotten interweavements. In Camille's story, she does not prescribe a rigorous program but negotiates an alternative project – and she therefore speculates about future bodies and bodily modifications through genetic engineering.[157]

However, from a body history perspective with genealogical intent, if you are still concerned with the long history of animal experiments, their unthemed continuity and biopolitical hierarchies, if you aim to reconstruct feelings less as a natural reaction in many living beings but rather as socially produced in many different ways, if you're less interested in the alleged stability and extraordinary form of bodily modifications through genetic engineering for certain actors but rather in the ongoing repetition of unstable materializations in everyday practices, thus, if you try to decenter not only humans but also other animals, with regard to their bodies, not with respect to their species – it could be fruitful if humans make kin with other animals not more, but less.

154 From this point of view, interdisciplinarity or transdisciplinarity is fruitful when it is based on collective struggle and not on individual thinkers. Cf. for example Julia Adeney Thomas, History and biology in the Anthropocene. Problems of scale, problems of value, in: AHR 119 (2014), pp. 1587-1607.

155 Thereby, humans and other animals are very often and very easily privileged over all other beings, for example over plants. Cf. for instance Jeffrey T. Nealon, Plant theory. Biopower and vegetable life, Stanford 2015.

156 Misleading in this regard for example: Gary Steiner, Animals and the moral community. Mental life, moral status, and kinship, New York 2008, pp. 132-142.

157 I'm absolutely not interested in somehow playing off Haraway's former work on animals in everyday practices against her recent move to animism as survival tool. To point out that a certain political response does not go hand in hand with a certain scientific perspective does not mean rejecting it per se or in toto.

For the social sciences, I would like to suggest, humans and other animals only have something in common when they come into existence and act in direct confrontation or in direct collaboration with each other, thus, when they form societies, assemblages or collectives, for a somewhat longer duration and with somehow traceable effects – not per se or as "beings of the earth" but in actu and as a certain "state of the social".[158] And only in this case do other animals really have a history. For we should keep in mind that history is not the same as time or development, nor is it the same as past or evolution. The concept of history, as it has been coined especially in Western Europe and North America over the last 250 years, is rooted in a specific view of, and a specific trust in, humans – continuity and order, hierarchy and progress. It reminds us that history is always written by certain humans.[159] Is it really fruitful to easily apply this concept to all other animals or even all humans – anywhere and anytime? How is empirical work in animal studies in general or in animal history in particular brought further by claiming that "all history is animal history"?[160] And how is it brought further by insisting that humans have influenced all other animals on planet earth as a complex ecological system?[161]

From this point of view, some of the monarch butterflies Camille is caring for have something in common with humans, but there are a lot of monarch butterflies and other animals which have nothing in common with humans – and why should they?[162] This is not a reckless call for purification, this is a careful request for differentiation – not in respect to different species, but in regard to different bodies.

158 Cf. in particular Latour, Reassembling the social, p. 78: "So, we have to take non-humans into account only as long as they are rendered commensurable with social ties and also to accept, an instant later, their fundamental incommensurability." In this sense, I would like to combine Latour with Bourdieu.

159 And postcolonial history, gender history, disability history and labor history remind us that – so far – they were mostly "white", "male", "healthy" and "bourgeois".

160 Etienne Benson, Animal writes. Historiography, disciplinarity, and the animal trace, in: Linda Kalof/Georgina M. Montgomery (eds), Making animal meaning, East Lansing 2011, pp. 3-16, p. 5.

161 Therefore, we may stop subsuming animal history under some kind of environmental history that very often cannot avoid reproducing the traditional distinction between nature and culture through the corresponding distinction between environment and society. Cf. in contrast, for example, the informative discussion in Emily O'Gorman/Andrea Gaynor, More-than-human histories, in: Environmental History 25 (2020), pp. 711-735, pp. 713-716.

162 While an onco mouse in a medical laboratory certainly has something in common with humans, I would like to argue, a masked shrew in a hidden moorland probably does not. Not only in her strict rejection of "transgenetic creatures" does Weisberg clearly reinforce the traditional distinction between nature and culture. Cf. in particular Weisberg, The broken promises, pp. 49ff.

In this sense, it seems important to me that almost at the end of "The Island of Doctor Moreau" the only surviving human – Mister Prendick, a former castaway who has nothing to do with the bodily modifications on the other animals – finally escapes from the isolated island. Although this remote place is not absolutely detached from growing populations or climate changes in general and ocean currents or shipping routes in particular, the "beast people" are now all on their own. Their established social order undergoes a decisive social change – and without a rigid system of clear rules and severe punishments, their bodily modifications seem to lose their alleged impact. Only against this background, it becomes clear that it was less extensive operations than everyday practices which socially produced these "humanized animals".[163] At the end of this troubling novel we don't find out – we don't know and we don't have to know – what will become of the "beast people". But at least they no longer have to test and prove the idea of kinship between humans and other animals which lies at the very heart of the Moreaucene and also, even more, at the very heart of the Chthulucene. They leave the Moreaucene, yet, they do not enter the Chthulucene. They are wherever they are.

Thus, at the end, Haraway is right, "it matters what stories we tell to tell other stories with".[164] From a body history perspective with genealogical intent, neither Moreau's story nor Camille's story, but perhaps a different kind of posthumanist speculations may help to think of more and more humans and more and more other animals not as related with each other, but as released from each other.

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163 Cf. in particular Wells, Island, pp. 121-128. See also Rohman, Burning out, p. 129. In this context, Wells's science fiction from 1896 could be read as a direct response to, and literary support for, Huxley's famous lecture from 1893 about the role of ethics for evolution: Thomas Henry Huxley, Evolution and ethics, Cambridge 2009 (orig. 1893). Cf. for example Neill, Human evolution, pp. 82f.; McLean, The early fiction, pp. 53f.; James, Maps, p. 66; McConnell, The science fiction, p. 102.

164 Haraway, Staying, p. 12. Cf. for instance Tobias Skiveren, Fictionality in new materialism: (re)inventing matter, in: Theory, Culture & Society 39 (2022), pp. 187-202; Helen Palmer, A field of heteronyms and homonyms. New materialism, speculative fabulation, and wor(l)ding, in: David Rudrum et al. (eds), New directions in philosophy and literature, Edinburgh 2019, pp. 215-233.

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Geteilte Körperlichkeit und verteilte Körperlichkeit.
Ein Gespräch mit Christopher Coenen

Henriette Gunkel & Heiko Stoff

Heiko Stoff (HS): Als wir das Heft für Future Bodies planten, habe ich natürlich auch erst mal gegoogelt und zu meiner Freude gesehen, dass ihr am Institut für Technikfolgenabschätzung und Systemanalyse (ITAS) im Karlsruher Institut für Technologie in dem Verbundforschungsprojekt FUTUREBODY beteiligt wart. Insofern ist unsererseits die allererste Frage: Was habt ihr denn da gemacht?

Christopher Coenen (CC): Wir sind sogar noch dabei, auf der absoluten Zielgeraden. Im Kern ist das ein Forschungsprojekt zur Zukunft des technisierten menschlichen Körpers, und zwar im Lichte neurotechnischen Fortschritts. Das Projekt hat u.a. ein starkes Element der Kunst- und Wissenschaftsverbindungen, und zwar nicht einfach als Outreachmittel, sondern durchaus als Methode des Erkennens. Partner sind etwa in Wien; die machen schon seit geraumer Zeit das BIO·FICTION Science Art Film Festival. Und das ging diesmal um das Thema „Zukunft des menschlichen Körpers im Lichte des neurotechnischen Fortschritts", aber auch „im Lichte der KI" und „des Fortschritts der künstlichen Intelligenz".

Unser internationaler Partner ist die University of Calgary. Dort ist Gregor Wolbring, ein Kollege, der sich schon sehr früh aktivistisch mit Menschen auseinandergesetzt hat, die sich selbst als liberal und libertär begreifen, de facto aber eher ableistisch-eugenisch denken. Er hat seine Perspektive sehr stark in das Projekt eingebracht und da geht es im Kern um den Fähigkeitsbegriff, um *ability*. Eine sehr pointierte These von ihm ist, dass wir in Zukunft eine Transhumanisierung des Ableismus erleben werden, d.h. dass wir in Zukunft als natürlich Geborene ohne Einschränkungen, die gemeinhin als Behinderung gelten, insgesamt als behindert begriffen werden, im Vergleich zu technisch aufgerüsteten Menschen. Das kann man sich insbesondere vorstellen, wenn es weniger um Gliedmaßenprothesen, sondern um alle möglichen Prothesen geht, die dem Zusammenspiel von Mensch und Maschine dienen können. Man kann sich durchaus für die Zukunft vorstellen, dass Menschen, die dann gewisse Schnittstellen nicht haben, ausgeschlossen sind.

Der dritte Partner von uns in FUTUREBODY ist die Universität Freiburg mit Oliver Müller, der das am stärksten philosophisch ausgerichtete Teilprojekt hat und schon seit vielen Jahren, sowohl in der Philosophie als auch in den Kunstwissenschaften und in der öffentlichen Wissenschaftskommunikation, gezielt Neurothemen behandelt hat. Unser Hauptforschungsinteresse an dem Projekt war der Versuch, unsere verschiedenen Ansätze zusammenzubringen, wobei tatsächlich der Ability-Begriff von Wolbring erst einmal im Mittelpunkt stehen sollte und wir uns die Frage stellen, wie weit in unseren jeweiligen Arbeiten an den angeknüpft werden kann. Empirisch haben wir außerdem auch stark mit dem Cyborg e.V. in Berlin zusammengearbeitet. Da geht es konkret um *Cochlea-Implantate*, die meistens Kindern eingesetzt werden.

Ein weiteres zentrales Element war die Zusammenarbeit mit der Kunst. Wir haben z.B. World Cafés gemacht, um dort anhand von zumeist Science-Fiction-Filmen über Körperverständnisse heute und mögliche Zukunftsperspektiven mit diversen Gruppen ins Gespräch zu kommen. Diese Aktivität hat besonders stark unter der Pandemie gelitten. Zuletzt haben wir in Berlin eine Veranstaltung gemacht, bei der es um die Zukunft des menschlichen Körpers im Lichte seiner Gegenwart und damit auch Vergangenheit ging. Und da war das Ziel eben keine Verengung auf Neurotechnologie und noch nicht einmal auf invasive Technologien, Prothesen etc., sondern wir haben uns umfassend die Frage gestellt, wie diese neuen Entwicklungen des Zusammenwachsens von Mensch und Maschine im Lichte einer Vielzahl menschlicher Körpertechniken gesehen werden können. Da haben wir auch versucht, konsequent die Schranken zwischen Kunst und Wissenschaft und auch zwischen Wissenschaft und Nicht-Wissenschaft einzureißen. Wir hatten z. B. auf den Podien einen Tätowierer, Lehrende für Meditation sowie jemanden, der wissenschaftlich-medizinisch zum Teil noch nicht so anerkannte Arbeit am Körper leistet, wie es beispielsweise Osteopathie, Reiki und Rolfing sind. Wir hatten erfreulicherweise auch Teilnehmende mit relativ niedriger formaler Bildung, was eine Seltenheit in Veranstaltungen zur Wissenschaftskommunikation ist. Es gab Kunstperformances, Tanz und ein Ergebnis der Veranstaltung war, dass über Professionen und Hintergründe hinweg eine große Einigkeit bestand, dass die Körper-Geist-Trennung völlig widersinnig ist.

Ich sollte vielleicht noch ergänzen, dass Wolbring im Kern sagt, dass unsere gesamte Gesellschaft, einschließlich ihrer starken ableistischen Ausrichtung – traditionell würde man vielleicht behindertenfeindlich sagen –, nach Fähigkeitserwartungen strukturiert ist, nach „ability expectations“. Und hier fände ich es sehr spannend, ob wir da mal zu einem gesellschaftlichen Diskurs kommen.

Henriette Gunkel (HG): In welchem Verhältnis stehen denn Fähigkeitserwartungen mit Erwartung an Technologien, die zukünftig in den Menschen sozusagen verankert werden?

CC: Wolbring bringt sehr anschauliche Beispiele. Wenn z.B. erwartet wird, dass ich alleine ohne menschliche oder von mir aus robotische Hilfe mein Auto tanken kann, ist das eine Fähigkeitserwartung. Und wenn es dann keine Tankwarte mehr gibt oder keine Roboter, die Tankwarte übernehmen, und die Person ohne Beine dann nicht mehr tanken kann, dann ist eine gewisse Fähigkeitserwartung automatisch eine Einschränkung. Wolbring sieht quasi einen Großteil der Technik als Prothesen. Das ist auch in unserem Feld, der geistes- und sozialwissenschaftlichen Forschung zu Technik, keineswegs eine neue Idee: In der Tierwelt gibt es viel Spezialisierung und unsere Spezialität ist es dann, dass wir eben nicht spezialisiert sind – dass wir die Technik entwickeln und nutzen. Da ist im Grunde die Technik, selbst ein Flugzeug, so gesehen, eine Prothese. Der Mensch hat nicht die Fähigkeit zu fliegen und da sagt Wolbring, dass Beinlosigkeit ähnlich wie Flügellosigkeit betrachtet werden kann. Ganz viele der Fragen, die auf den technisch unterstützten Körper zielen, sind keineswegs beschränkt auf die Community von Menschen mit Behinderung. Die Frage z.B., inwieweit mit Rädern unterstützte menschliche Mobilität möglich ist oder nicht, betrifft nicht nur die Rollifahrenden, sondern auch Menschen, die Kinderwägen nutzen und Leute mit Rollatoren. Wenn wir eine Gesellschaft konsequent dahingehend denken würden, dass sie durch Fähigkeitserwartungen strukturiert ist, und glauben, dass wir das zum Problem machen müssen, haben wir, denke ich, eine sehr spannende, letztendlich auch gesellschaftstheoretische Fragestellung. Und das ist auch meine Hoffnung, dass wir in dem Projekt aus diesen unterschiedlichen Richtungen zu vielleicht neuen Formulierungen kommen, zu neuen konzeptionellen Fassungen.

In der Definition des Kommunismus soll es ja z.B. um die Bedürfnisse aller gehen, im Sozialismus heißt es: jede:r nach den eigenen Fähigkeiten. Auch in diesen Definitionen ist bereits die Überwindung der Strukturierung der Gesellschaft nach körperlichen Fähigkeiten angelegt – ‚körperlich' hier verstanden als zugleich körperlich und geistig, weil wir ja die vulgär-cartesianische Trennung nicht machen wollen. Wolbring weist auch immer unpolemisch, aber durchaus nachdrücklich darauf hin, dass auch in der Gewerkschaftsbewegung, Arbeiter:innenbewegung und Frauenbewegung ein starker Ableismus immer wieder festzustellen ist. Wir können uns, glaube ich, eine Gesellschaft kaum vorstellen, die nicht nach Leistung strukturiert ist, die nicht sozusagen Fähigkeiten prämiert,

Fähigkeiten im weitesten Sinne, Fähigkeiten, die wir halt besitzen durch unsere körperlich-geistige Verfasstheit.

HS: Das würde also heißen, dass wir das Ganze ohnehin nicht getrennt von den gesellschaftlichen Bedingungen, unter denen wir darüber nachdenken, verhandeln können. Und Ableismus lässt sich ja in unterschiedliche Richtungen denken. Man kann zum einen anhand der Beispiele sagen, bei jeder körperlich-geistigen Technikentwicklung – um das mal in ein Wort zu packen – muss man an die denken, die aus unterschiedlichen Gründen daran so nicht teilhaben könnten. Das wäre eher ein Achtsamkeitsdiskurs. Wenn wir also bestimmte Veränderungen machen, müssen wir an die denken, die eben die Rollis brauchen, z.B. Zum anderen geht es ja in die Richtung – und das ist sicherlich auch miteinander verbunden – darüber nachzudenken, dass Erwartungen hergestellt werden, die sich wiederum an eine Gesamtgesellschaft wenden, die eigentlich von allen verlangt, sich da ständig immer wieder an die technischen Möglichkeiten anzupassen und sich zu steigern. Also das, was im *human enhancement* so drinsteckt, als eine Forderung, alle Fähigkeiten zu nutzen, um die eigenen Leistungsmöglichkeiten zu optimieren. Nennen wir es mal so.

CC: Genau. Der eine Punkt ist die Frage der Technikentwicklung oder technischen Unterstützung für die Lösung gesellschaftlicher Probleme. Das ist so eine Art Grundsatz in der Technikfolgenabschätzung, dass wir uns bei gesellschaftlichen Problemen oder Herausforderungen immer fragen: Welche Hightech-Lösungen gibt es dafür, was für Lowtech-Lösungen und was für Notech-Lösungen? Die andere Frage lautet: Geht es um individuelle technische oder kollektive infrastrukturelle Lösungen? Und da ist natürlich sehr eingängig, wenn Wolbring sagt, dass Leute, die ohne Beine geboren sind, z.B., und die sich keineswegs als defizitär betrachten, nicht genötigt werden sollten, dass sie Gliedmaßen, Beinprothesen tragen, anstatt dafür zu sorgen, dass sie mit ihrem Rollstuhl überall hinkommen. Das ist sozusagen eine politisch-gesellschaftliche Frage, wo wir sagen würden, da muss man halt die verschiedenen Möglichkeiten abwägen. Man kann natürlich auch starke Gründe dafür finden, dass wir in einer technisch avancierten Gesellschaft, wie wir es in Deutschland z.B. sind, eigentlich in der Lage sein müssten, auch die Bedürfnisse von kleineren Gruppen zu befriedigen. Und in der Technikfolgenabschätzung mit ihrem starken Politikberatungsanteil, kann man natürlich einfach darauf verweisen, dass, auch wenn das natürlich so nicht geframed wird, in der Regel alternde Gesellschaften natürlich auch Gesellschaften mit einem weitaus höheren Anteil von Mobilitätseinschränkungen sind, die dann umgangssprachlich als Behinderungen bezeichnet werden. Ich schlage da

immer vor, dass man von einer Leistungssteigerungsgesellschaft anstatt einer Leistungsgesellschaft spricht. Das heißt ganz individualisierte Ich-Unternehmer:innen legen, genau wie du gesagt hast, Wert darauf, ständig die Voraussetzungen ihrer Leistungsfähigkeit zu erhalten und am besten auch auszubauen. Einfach von 9h bis 17h deine Leistung zu erbringen und letztendlich bloß darauf zu hören, was man dir sagt, und zu machen, wie es alle machen, reicht nicht mehr, sondern auf allen möglichen Ebenen findet eine Kompetitisierung – ist das ein Wort, ja? – statt. Dabei werden Wettbewerbselemente sozusagen in das eigene Handeln eingebaut. Und dabei spielt die Leistungsfähigkeit eine sehr große Rolle. Ich habe jetzt keine harten Daten, aber ich kenne so viele Menschen, die ständig darauf hinweisen, wie viel Email sie am Tag haben, oder auch auf die Tendenz, weniger zu schlafen und dies vollkommen normal zu finden. Diese ständige Überarbeitung zu einem Zeitpunkt, wo wir eigentlich auch sagen könnten, zumindest in den Wohlstandsfestungen des globalen Nordens: Wir haben eigentlich die Möglichkeit zu Muße und ähnlichem. Und das sind natürlich alles Sachen, wo dann die Frage gestellt wird: Wie halte ich das durch, diesen sinnlosen Wettbewerb? Und den hält man am besten durch, indem wir die körperlichen Voraussetzungen noch weiter stärken: weniger Schlafbedürfnis, höhere kognitive Fähigkeiten, Fitness. Und vielleicht auch die direkte Manipulation des Geistes mit Technologie.

HG: Ich finde es spannend, wie du gerade zwei Stränge aufmachst und zusammenbringst: Auf der einen Seite Implantate noch mal ganz anders denken, auch über die Manipulation des Kognitiven. Das wären Future Bodies aus einer leistungssteigernden gesellschaftlichen Perspektive. Auf der anderen Seite die Frage, wie könnten wir auch KI oder andere technologischen Möglichkeiten, die sich gerade auftun und an denen im Zusammenhang mit dem menschlichen Körper experimentiert wird, auch nutzen, um noch einmal die Frage zu stellen: Wie wollen wir eigentlich leben? Das ist interessant, dass du das nochmal so vehement einforderst. Auf der einen Seite eben diese von der Industrie antizipierte Erwartungshaltung an noch mehr Anforderungen. Und gleichzeitig auch: Wie könnte diese Technologie aber vielleicht auch genutzt werden, um eine Idee von Future Bodies nochmal in eine Vorstellung von einem besseren Leben einzubetten?

CC: Man kann natürlich immer die Frage der Ressourcenknappheit in den Raum stellen. Aber wenn wir für einen Moment von dieser Frage absehen, ist kritikwürdig, dass Lebensqualität im Gesundheitssystem kein Kriterium z.B. für die Finanzierung von Prothesen ist. Es sollte aber doch zunächst das Ziel sein, mit allen möglichen Technologien, von denen ja viele

im weitesten Sinne prothetischen Charakter haben, Lebensqualität individualisiert zu unterstützen. Da geht es dann aber nicht nur um Implantate oder körperexterne Gerätschaften, die Körperfunktionen unterstützen, sondern eine inklusive, barrierefreie Einrichtung des öffentlichen Raums oder auch die Ausstattung mit Personal, so dass insgesamt alle möglichen Körperlichkeiten so unterstützt werden, dass Menschen das tun können, was sie wollen, ohne genötigt zu werden, ihren Körper zu modifizieren.

Für mich ist da eine ganz einfache Frage: Was wollen denn die Leute wirklich? Weil alles, was in die Richtung Anpassung des Körpers läuft, basiert auf einem gesellschaftlichen Druck, den Körper einschneidend – im wahrsten Sinne des Wortes –, physisch zu verändern. Das finde ich erst mal bedenklich. Ob aus einer politikwissenschaftlichen oder philosophischen Perspektive betrachtet, ist das Recht auf körperliche Unversehrtheit juristisch so hoch angesiedelt, dass ich bei allen leichtfertigen Spielereien damit meine Bedenken habe. Und insofern würde ich sagen, der Zukunftskörper, so wie du das jetzt als Zusammenspiel von Technik und Leiblichkeit formuliert hast, sollte zunächst mal durch die in diesem Fall wirklich wichtige Autonomie gekennzeichnet sein. Nicht Autonomie im Sinne, dass die Person unbedingt ohne andere Menschen auskommen muss – was häufig die Idee ist, also liberal-individualistisch verkürzt –, sondern in Bezug auf die Entscheidungsfreiheit. Es muss die Möglichkeit bestehen, die mal abfällig als *Refusenik* bezeichnete Haltung einzunehmen. Es muss die Möglichkeit bestehen, in diesem Fall – anders als es etwa beim Internet der Fall war – auch Nein sagen zu können und trotzdem in dieser Gesellschaft gleichberechtigt leben zu können. Es geht da eben wirklich um Eingriffe in den Körper, die einen höheren Wert haben als z.B. gleiche Bildungschancen. Fragen wie „Lassen wir uns jetzt irgendein Implantat einsetzen oder schnippeln wir hier oder da am Körper rum?“ haben für mich noch mal eine ganz andere Qualität. Da sollten wir die Gesellschaft schon so einrichten, dass niemand dazu genötigt ist. Meines Erachtens bricht hier das Recht des Kindes auf körperliche Unversehrtheit auch das Elternrecht. Anders gelagert ist es nur, wenn frühe Eingriffe, medizinisch indiziert sind, wie bei Cochlea-Implantaten. Die sind im Schnitt leistungsfähiger, wenn sie früh implantiert werden.

HG: Kannst du eine kurze Fußnote einfügen, was Cochlea-Implantate sind?

CC: Das ist sozusagen das künstliche Gehör. Es gibt seit längerer Zeit eine größere Diskussion, dass Eltern, die selber nicht hören, oft nicht wollen, dass ihre Kinder das erhalten, da diese damit zu früh aus der elterlichen

Kultur gerissen würden. Das war ein frühes ethisches Thema. Aber mir geht es darum, dass Eltern keine zu weitreichenden Eingriffsmöglichkeiten in den Körper ihrer Kinder haben sollten. Dies ist durchaus ähnlich argumentiert, wie es Jürgen Habermas in Bezug auf vorgeburtliche genetische Veränderungen in seinem Buch „Die Zukunft der menschlichen Natur" tat. Ich bin der Ansicht, dass das Elternrecht nicht zählen sollte, wenn es darum geht, dass insbesondere irreversible Veränderungen am kindlichen Körper vorgenommen werden. Da geht es um zu tiefe Eingriffe, als dass Eltern ihren *Informed Consent* für das Kind geben dürfen.

HS: Das ist schon schwierig genug. Im Grunde muss man ja genau gucken, worum es dann sehr konkret geht. Und *informed consent* funktioniert immer nur mit *compliance*, die wird irgendwie erwartet. Zwar wird formal das Recht gegeben, dem zu widersprechen, aber das Widersprechen erscheint in aller Regel als unvernünftig. Schließlich wurde jemandem mit verstandesmäßigen Argumenten gesagt, warum das jetzt wichtig ist. Und dagegen Widerspruch zu erheben – die *Non-Compliance* – erscheint vor allem in der medizinischen Praxis dann auch als irrational. Das ist so schon problematisch. Theresia Degener hat das um 1990 in dem Dokumentarfilm von Didi Danquart – *Der Pannwitzblick*, bei dem es vor allem auch um eine Verbindung der nazistischen Vernichtungspolitik zur Gegenwart geht – ganz deutlich formuliert, dass sie als Contergankind die Prothesen nicht wollte. Und das schließt an das an, was du gesagt hast. Es fand dann letztlich doch über die Eltern statt, denen von den Ärzten deutlich gemacht wurde, dass das nur das Beste für ihre Tochter ist. Aber die Tochter will das nicht. Im Grunde werden die Eltern dann ja auch in die Situation hineingezwungen. Die fragen sich vielleicht später auch: Warum haben wir das eigentlich gemacht? Also das ist schon wirklich ein Grundproblem, den Eingriff im Namen einer bestimmten Therapie durchzuführen, die für das Kind eine bessere Lebensperspektive schaffen soll, wobei das letztlich nicht wirklich ganz klar ist, ob das wirklich so ist. Gleichzeitig ist ohnehin interessant an dieser Debatte, dass Medizin eigentlich immer das Argument ist für Future Bodies. Würden wir nur Ray Kurzweil oder irgendwelchen anderen Leuten zuhören, wenn es um zukünftige Körper geht, wäre das höchstwahrscheinlich nicht besonders effektiv. Aber es gibt tatsächlich gute Gründe und das ist immer das Argument. Medizinisch ist das alles wichtig und das hilft uns Menschen doch dann später bei bestimmten seltenen Erkrankungen, bei bestimmten Formen des Disabled-seins. Wie geht ihr damit eigentlich um, also mit diesem Spiel zwischen therapeutischer Nützlichkeit, einerseits und, ich sage es mal flapsig, transhumanistischen Spinnereien andererseits? Das ist ja das Spannungsfeld in dem über zukünftigen Körper diskutiert wird.

CC: Also zunächst sehe ich auch weiterhin keine gewaltigen Durchbrüche, die es rechtfertigen, dass wir unsere von vielen als ernüchternd wahrgenommene Diagnose aufgeben, dass nämlich im Moment in Sachen nichttherapeutischen Enhancement sehr wenig möglich ist. Mittel zum kognitiven Enhancement sind z.B. allesamt nicht oder nur wenig besser als Koffein und dann auch noch weniger erprobt als Koffein.

Warum sagte ich ‚nichtherapeutisches' Enhancement? Definitorisch unterscheiden wir zunächst zwischen therapeutischem und nicht-therapeutischem Enhancement. Es geht also nicht um den Gegensatz Therapie versus Enhancement, weil man sich da alle möglichen Fragen hinsichtlich Gesundheitsbegriff, Normen und so weiter einhandelt. Wir sagen lieber: Okay, hier gibt es einen Körper und da gibt es einen Zustand A, und dann gibt es später einen Zustand B, und wenn das Ganze als eine Steigerung der Leistungsfähigkeit begriffen werden kann, dann ist das erstmal Enhancement. Und daraus folgt dann auch, dass wir von therapeutischem Enhancement reden können. Formen von nicht-therapeutischem Enhancement sind aber in der Regel die ethisch spannenderen Fragen. Wobei wiederum in Sachen Technologieentwicklung häufig die anderen viel spannender sind, weil da meistens erst noch die Musik spielt, während „Superman-Verbesserungen" in fast jeder Hinsicht noch weit in der Ferne sind. Außerdem stellt sich dann immer die Frage: Geht es um Handlungen im medizinischen Kontext oder nicht? Und da stellen wir fest, dass es auf jeden Fall starke Tendenzen zu dem gibt, was du „transhumanistische Spinnereien" genannt hast, die Teil eines größeren gesellschaftlichen Trends sind, nämlich dem der Selbstoptimierung. Zwar ist das meiste jetzt nicht in unserem Sinne Enhancement, weil wir Enhancement als etwas definieren, bei dem in den Körper eingegriffen wird.

Wir haben da auch Abgrenzungsschwierigkeiten, z.B. bei der Stimulation des Gehirns, bei sich fragen lässt, was denn der grundlegende Unterschied ist zwischen einer von außerhalb des Körpers erfolgenden neurotechnologischen Stimulation und dem Lesen eines Buchs, das ja auch das Gehirn verändert. Wir plädieren für den Fokus auf naturwissenschaftlich-technische und medizinische Eingriffe in den menschlichen Körper, weil wir sonst bei dieser ganzen Diskussion ja über alle mögliche Technik, sogar über Bildung usw. reden müssten. Damit verlöre eine spezifische Enhancement-Diskussion ihren Sinn. Wir haben im Moment auch alle möglichen Optimierungstendenzen, die in unserem Sinne kein Enhancement sind. Viele Leute, die joggen, haben mittlerweile irgendwas, mit dem sie sich selbst vermessen. Sie versuchen mit und durch die Selbstvermessung und Interaktion mit dem Gerät ihr eigenes Sportverhalten zu optimieren. Aber es kann ja auch eine Verbesserung sein, sich, bei dann

eingeschränkter Geistesgegenwart, z.B. vertiefen zu können in die Natur oder anderes Schönes. Deswegen gibt es Leute, die argumentieren, dass auch psychedelische Drogen als Enhancement begriffen werden können. Da stellt sich also noch mal die Frage, was denn mit dem Enhancementbegriff gemeint ist. Wir haben uns aus den gegebenen Gründen, Stichwort Transhumanismus und dessen gesellschaftlicher Einfluss, ganz stark auf das, ich sage es mal ein bisschen salopp, „HöherSchnellerWeiter"-Enhancement konzentriert. Aber da kann man natürlich auch in eine ganz andere Richtung denken. Wie z.B. beim durchaus nicht im engeren Sinne transhumanistisch dominierten Verein Cyborg e.V. in Berlin, wo häufig darauf hingewiesen wurde, dass es auch ganz andere Arten und Weisen gibt, sozusagen neue Arten der Wahrnehmung der Welt, die nicht unbedingt direkt irgendeinen Vorteil haben hinsichtlich der wettbewerbsorganisierten Gesellschaft, sondern einfach neue Ausdrucks- und Wahrnehmungsmöglichkeiten bieten.

Ich würde gerne noch kurz auf deinen anderen Punkt zurückkommen, den du in Bezug auf den Film *Der Pannwitzblick* gemacht hast. Gerade in Zeiten der Refaschisierung, die wir eigentlich fast global feststellen, finde ich es schon entscheidend zurückzublicken, wenn es um die Zukunft von Körpern geht. Ich möchte zwar keinesfalls die besondere Bedeutung des Antisemitismus in der NS-Zeit leugnen, aber es ist bemerkenswert, dass am Anfang der Vergasung der Ableism steht. Welche Körper wurden denn von den Nazis als besonders verachtenswert, wertlos und vernichtungswürdig betrachtet? Das waren zunächst behinderten Körper, gerade auch von Kindern. Das ist nochmal ein Argument, sehr, sehr vorsichtig zu sein, wie du ja auch selber geschildert hast, und nicht zu sehr darauf zu vertrauen, dass es ein Einvernehmen zwischen Staat und Eltern geben kann. Ich würde wirklich sagen, soweit es möglich ist, muss es höchstmöglichsten Schutz für Körper von Menschen geben, die nicht nach normalen Kriterien zustimmungsfähig sind. Das heißt jetzt nicht, dass Eltern unter keinen Umständen entscheiden dürfen, dass Ihr Kind z.B. Ritalin erhält. Ich möchte nur darauf hinweisen, dass für mich die Zukunft des Körpers immer nur vor dem Licht der auch körperpolitisch zentralen Herausforderungen unserer Zeit zu verstehen ist. Und dazu gehört politisch eben auch diese Refaschisierung. Die sieht körperpolitisch sicherlich anders aus als in den 1920er/30er Jahren, aber weist durchaus auch Ähnlichkeiten auf. Und ich glaube, eine Lehre aus der Geschichte ist, dass man besonders genau hinschauen muss, sobald insbesondere exterminatorischer Ableism sich zeigt.

HS: Das wäre vielleicht tatsächlich eine spannende Frage: Wann fängt es denn an? Also, ich würde ja anhand meiner eigenen Arbeiten vor allem

zur Trope der Verjüngung behaupten, dass das frühe 20. Jahrhundert auf verschiedenen Ebenen einen Bruch darstellt. Während wir heute zumeist Dystopien haben, also eher eine Zunahme der Dystopien, haben wir da enorm viele Utopien experimenteller und geschriebener Art. Welche Wege gab und gibt es denn jetzt, um in eine bessere Zukunft zu gelangen? Die Revolution? Das ist immer noch das klassische Thema, aber spätestens in den 1920er Jahren ist das problematisch, offensichtlich. Die Erfolge sind nicht besonders gut. Dann haben wir Erziehung. Das ist auch langwierig, aber es ist ein großes Thema. Wir können eigentlich die besseren Menschen erzogen werden? Und der Mensch, so pathetisch gesprochen, aber auch der Körper, die scheinen die Möglichkeiten der Zukunft zu begrenzen. Und das ist genau der Moment, wo andere Versuche eine Rolle spielen. Und das kann Eugenik sein, aber Eugenik ist extrem langwierig. Die rechnen das ja aus. Wann haben wir denn dann die eugenisch verbesserte Menschheit? Wann haben wir denn da die bessere Welt? Das findet immer erst so in zwei-, dreitausend Jahren statt, da haben wir dann so eine eugenisch perfekte Gesellschaft. Ist eigentlich auch keine besonders erfreuliche Perspektive, ganz abgesehen von den Methoden. Aber zumindest bei diesen Verjüngungsgeschichten durch Hormonmanipulationen, Schönheitsoperationen, aber auch Körperkultur geht es relativ ad hoc. Die neuen Menschen, von denen dann auch immer die Rede ist, die können sich so viel, viel schneller, viel besser verwirklichen. Also das Versprechen ist, dass man es viel schneller hinbekommt. Und Zeit ist ja immer ein Argument. Es gibt dann Prognosen, die dann immer mal so rausgehauen werden und auch über die Medien zirkulieren: In dreißig Jahren ist es dann so weit. Irgendwann ist es möglich, wirklich ewiglich jung zu sein, leistungsfähig, fit, flexibel bis ins allerhöchste Alter. Würdest du das ungefähr so teilen? Oder hättest du noch eine ganz andere Einordnung?

CC: Mir ist es auch hier wichtig, die auf moderne Naturwissenschaft, Technik und Medizin gestützten Verbesserungs- oder Transformationsvisionen bezüglich des menschlichen Körpers zu unterscheiden von Gilgamesch und was weiß ich was. Also nicht, dass ich dem nicht zustimmen würde, dass gewisse Grundideen, wie die Überwindung des Todes oder ewige Jugendlichkeit, durchaus sehr alte Ideen sind. Es ist, glaube ich, sehr wichtig, wann das Ganze die Gestalt einer naturwissenschaftlich-technisch basierten Ideologie annimmt – oder von mir aus, wenn wir es nicht gleich eine Ideologie nennen wollen, zumindest einem klar beschreibbaren, abgrenzbaren Set von Technikvisionen. Da bin ich bei Dir, denke ich. In Bezug auf den Transhumanismus: Das mir älteste und bekannteste Beispiel für diesen, wo wirklich die Kernideen alle versammelt sind, ist der Afrika-Reisende und Schriftsteller Winwood Reade. Der war

später, nach seinem Tod, dann Held der Atheistenszene in Großbritannien. Sein Buch „Märtyrertum des Menschen“, veröffentlicht bereits Anfang der 1870er Jahre, hat u.a. Churchill zutiefst beeindruckt. Conan Doyle, H.G. Wells und andere Prominente haben das gelesen und waren begeistert. Und da sagt Reade im Grunde genommen: Wir müssen aufbrechen, wir werden aufbrechen ins Weltall. Und ich glaube, deswegen ist dieser ganze Transhumanismus auch im Kern eine Reaktion nicht nur auf den Darwinismus – also die Frage: „Was kommt nach dem Menschen?“, die hat ja auch Wells ganz genauso formuliert –, sondern ist auch eine Frage zur Stellung des Menschen im Weltall, das dann als eroberbarer Raum begriffen wird, passend zur Hochzeit des Imperialismus. Um ins Weltall aufzubrechen, werden wir neue, von der Wissenschaft ermöglichte Körper brauchen, so schreibt Reade, und dann erreichen wir die Überwindung aller Krankheiten und die Unsterblichkeit. Da ist das Programm schon da, allerdings noch ohne naturwissenschaftlich-technische Expertise, sehr vage und noch ganz stark als eine Art von Anti-Christentum. Alles im Rahmen dieser damals wichtigen Vorstellung, dass die Menschheit im Zuge des Fortschritts gottgleich werde. Und dann genau, wie du sagst, wird es auch spannend, wenn die Experimente beginnen. Ich denke mal, du hast es zwar nicht explizit genannt, aber hast wahrscheinlich auch gedacht an die frühsowjetischen Experimente mit der, sozusagen, Wiedererweckung von Hunden und der Blutverjüngung. Letzteres – dass alte Männer das Blut von jüngeren erhalten – ist ja jetzt auch wieder in Kalifornien eine kleine Mode.

HS: Du beziehst dich auf die Wiederbelebungsversuche eines Hundes durch eine Art Herz-Lungen-Maschine, die in der frühen Sowjetunion durchgeführt wurden.

CC: Ja, und es gab in der frühen Sowjetzeit auch noch erkennbaren Einfluss des Kosmismus, quasi der russischen, einer stärker religiös geprägten und weniger religionskritischen Spielart des Transhumanismus. Die Kosmisten wurden von den Bolschewiki abgelehnt. Auch von jemandem wie Leo Trotzki, der an anderer Stelle geschrieben hat, dass wir in Zukunft, nachdem wir die Fesseln des Kapitals abgestreift haben, auch die Fesseln der Biologie abstreifen werden. Er hat gegen die Kosmisten u.a. als bürgerlich mystische Verirrung argumentiert. Trotzdem konnten sich die Kosmisten eine ganze Weile lang halten. Alexei Gastev halte ich für sehr wichtig für die Geschichte der Cyborgisierung. In dessen Zentralinstitut für Arbeit waren auch kosmistische Einflüsse erkennbar, und die waren anscheinend auch recht stark in der Kommission, die sich mit

Lenins Leichnam auseinanderzusetzen hatte. Es heißt, dass ernsthaft überlegt wurde, mit dem ein Wiederbelebungsexperiment zu machen.

Ob das alles so stimmt, konnte ich nicht prüfen, aber der Einfluss des Kosmismus in der frühen Sowjetzeit existierte auf jeden Fall. Und das ist im Kern die Idee, dass Naturwissenschaft und Technik sämtliche Versprechen der christlichen Religion einzulösen haben, einschließlich der Auferstehung aller Toten in der Zukunft. Ich würde dir also zustimmen. Der Moment, in dem sich der Transhumanismus als Ideologie oder zumindest als Set von Technikvisionen wirklich mit naturwissenschaftlich-technischer Imagination verbindet, ist für mich bei J.D. Bernals „The World, the Flesh und the Devil" von 1929 zu finden, wo es eben nicht wie bei dem ihm nahestehenden Biologen J.B.S. Haldane, bei Julian Huxley oder auch bei Olaf Stapledon um die langen Zeiträume geht, sondern er sagt im Grunde genommen, der Mechanical Man ist die logische Fortsetzung der menschlichen Evolution und er wird einfach gebaut. Und das taucht übrigens als Echo dann noch mal Anfang der 1960er Jahre bei dem berühmt berüchtigten Ciba-Symposium wieder auf. Da sagt das auch Joshua Lederberg in der Nachdiskussion, wo ja witzigerweise auch Haldene dabei ist, die jungen Gentechniker zusammen mit den alten sind. Da sagt Lederberg: Wir müssen ja nicht Tausende von Jahren warten. Wenn wir für die Weltraumfahrt Leute mit einem Schwanz und ganz kurzen Beinen brauchen, dann hacken wir ihnen die Beine ab und basteln einen Schwanz hinten dran. Es geht gar nicht darum, dass das biologische Wesen weitergeführt wird, sondern es geht um den Bruch mit dem biologischen Wesen. Und das wird ja von Bernal in erstaunlichen technischen Fantasien schon ausgearbeitet, wie allmählich nach und nach, nicht nur der menschliche Körper, sondern alles Leben auf der Erde durch technische Sachen ersetzt wird. 1870 bis 1930, das ist so ungefähr die Zeit, in der die ganze Ideologie schon ziemlich ausbuchstabiert wird, an der sich bis heute inhaltlich nichts groß geändert hat. Der Rest ist eigentlich nur technische Modernisierung.

HS: Ich muss einmal ganz kurz off-topic erzählen, dass ich letzte Woche in Köln beim Deutschen Luft- und Raumfahrtzentrum war, und zwar in der medizinischen Abteilung, im Envihab. Das zielt ja genau darauf ab: Wie können wir Menschen weltraumfähig machen? Die Idee ist, dass die im Raumschiff dreimal am Tag in eine Zentrifuge gelegt werden, um so bestimmte Kreislaufprobleme, die die natürlich haben, wenn sie dann irgendwie auf dem Mars rausstiefeln sollen, verhindert werden. Also die forschen die ganze Zeit daran, wie man den Menschen fähig machen kann, unter Weltraumbedingungen zu existieren. Das ist aber weit entfernt von dem, was utopisch so verhandelt wurde. Das ist auf einer anderen Ebene.

Die machen auch aufwendige Schlafversuche. Das Envihab ist in so inneren Modulen gestaltet, da gibt es quasi eine Wohngemeinschaft, die über einen längeren Zeitraum auf Unterdruck gesetzt werden kann. Und in einem Schlaflabor haben die dann Fenster und so eine Art Innenhof und da liegen überall so riesige Steine. Die sehen aus wie bei den alten Star Trek-Folgen aus den 1960er Jahren. Das ist eine Fantasieweltraumlandschaft, die sie da hinzugebaut haben. Aber das ist sozusagen die Realität, wie an Körpern gearbeitet wird, die dann auch superspannend ist, aber deutlich weniger Glamour hat als alle anderen transhumanistischen Ideen, die es so gibt.

CC: Das ist nicht off-topic. Wenn man sagen würde, dass der Transhumanismus auch ein Auswuchs der astrophysischen Revolution des 19. Jahrhunderts ist und dass er heute insbesondere eine Kernideologie des Weltraumzeitalters ist, dann sind wir ja mittendrin, um zu fragen: Was geht da eigentlich konkret? Das ist, glaube ich, sehr spannend. Und in dem Kontext würde ich sagen, dass Konstruktionen von Körperlichkeit vor dem Hintergrund der menschenfeindlichen oder lebensfeindlichen Umgebung, die uns da in dem Weltraumforschungsdiskurs gezeigt wird, zunehmend wichtig werden. Weil nämlich die Weltraumforschung immer wichtiger wird. Da ist die Bandbreite natürlich weit. In der Weltraumforschung gibt es durchaus – jetzt nicht nur in abseitigen transhumanistischen Ethik-Spekulationen, sondern durchaus weiter im Kern des Diskurses – auch die Diskussion, inwieweit Human Enhancement helfen kann. Und was auch da ausgetestet wird, ist der engere Mensch-Technik-, Mensch-Maschinen-Zusammenschluss. Das ist auch der Kern der Cyborg-Idee. Da geht es darum, den Menschen in einer vollkommen lebensfeindlichen Umgebung bestmöglich an das Hochtechnisierte anzupassen.

HG: Ich würde gerne nochmal an das anschließen, was du vorhin mit dem Cyborg e.V. in Berlin zusammengebracht hast, nämlich Enhancement nicht immer im Sinne von „höher, schneller und weiter“ zu denken. Du hattest auch kurz auf den Klimawandel verwiesen, und eine der Fragen dieser Zeit ist natürlich nicht nur die Mensch-Technik-Verbindung, sondern auch andere, *more than human* Beziehungen. Die werden immer zentraler. Und da frage ich mich, wie könnte diese Idee von Future Bodies aus einer weniger anthropozentrischen Perspektive gedacht werden. Das finde ich eine total wichtige Frage: Wie sind sozusagen Future Bodies nicht von einer Leistungssteigerungsgesellschaft aus zu denken, sondern aus einer Notwendigkeit heraus, den Menschen zu dezentrieren? Wie könnte sowas aussehen? Ich denke da auch an das Potential der Kunst. Bei SF-Filmen habe ich das Gefühl, da fällt Leuten gerade wenig ein, da

gibt es wenig, was komplett neu ist, ähnlich wie wir es gerade mit aktuellen Utopien andiskutiert haben. Ich habe gerade mehr mit Virtual Reality (VR) zu tun gehabt, wo über die Brille Verbindungen aufgemacht werden, die noch mal anders unsere Umwelt wahrnehmbar machen. Und ich frage mich, ob du in deiner Arbeit auf ähnliche Future-Bodies-Ansätze stolperst und ob das z.B. überhaupt eine Frage an den Transhumanismus ist?

CC: Also ich finde das extrem spannend. Es gibt also Fragen an den Transhumanismus, verstanden sozusagen als der Transhumanismus von weißen Erste-Welt-Jungs, egal welchen Alters, wo sich sozusagen akademischer Posthumanismus mit Transhumanismus mischt. Und da gibt es auch viele Kunstprojekte, die z.B. genau diese Fragen stellen, oder auch genau solche Ideen in den Mittelpunkt rücken. Da geht es um Körpergrenzen, Kritik des „höher, schneller, weiter" nicht im Sinne von Vereinheitlichung, sondern von Vielfalt. Und das ist teilweise sogar aus dem Kern der transhumanistischen Bewegung heraus in gewissem Maße schon so gewesen. Bezeichnenderweise war es dann auch die lange Zeit einzige prominente Frau in der transhumanistischen Bewegung, Natasha Vita-More, die relativ früh zu denen gehörte, die Verbesserungen oder Veränderungen des menschlichen Körpers vorgeschlagen haben, die nicht unbedingt „höher, schneller, weiter" sind. Da geht es z.B. um mehrere verschiedene Geschlechtsorgane. Kann man natürlich auch jetzt als „höher, schneller, weiter" sehen. Wir sind ja mit der Forschung im Bereich *artistic research* und Kunstwissenschaft-Schnittstellen gar nicht so weit. Ich mache das zwar jetzt auch schon ein paar Jahre, aber das ist eigentlich ein Bereich der Technikfolgenabschätzung, den ich gerne weiter ausgebaut sehen wollte. Da habe ich tatsächlich den Wunsch, genau solche Fragen zu stellen. Also eine Frage wäre z.B. die nach geteilter Körperlichkeit – so würde ich das vielleicht mal nennen. Es gibt natürlich sowas wie z.B. den umstrittenen Kevin Warwick, einen Robotiker, der sich als Cyborg positioniert hat. Der hat frühe Cyborg-Experimente gemacht, die damals nicht sehr ernst genommen wurden. Und eins davon ist so, dass er und seine Frau durch Implantate gleiche Körperempfindungen haben. Und dann, wenn man von der geteilten Körperlichkeit ausgeht, könnte man sich natürlich auch überlegen, ob einige Technologien eingesetzt werden können, um eben nicht Verbesserung, sondern eher Schmerz zu teilen.

HG: Okay, aber das geht ja wieder vom menschlichen Körper aus. Dann wäre die geteilte Körperlichkeit eher so: Ich gucke jetzt rüber zum Baum.

CC: Stimmt, was ich gesagt habe, geht ein bisschen stärker in die Richtung. Aber ich glaube, diese verteilte Körperlichkeit löst zwar einen

Anthropozentrismus nicht auf, aber zumindest dieses „höher, schneller, weiter“. Also das wäre eher die Stärkung von Beziehungen in ihrer Empathie und vielleicht auch eher die technische Verstärkung von Aufeinander-angewiesen-sein oder Abhängigkeit. Und Abhängigkeit klingt ja schon wieder so negativ. Jetzt wäre die Überlegung, ob wir das ausweiten könnten auf andere denkende oder fühlende Wesen. Da gibt es doch auch Arbeiten, bei denen es eigentlich darum geht zu gucken, was an anderen Tieren, wenn ich jetzt mal die *critical animal studies*-Terminologie benutze, ausprobiert wird, was vielleicht dann auch in Zukunft an Menschen ausprobiert wird. Ich finde es eine interessante Frage, sich mal zu vorzustellen, ob wir als Menschen vielleicht, durch Manipulationen auf der sensorischen Ebene, nachempfinden können, was andere Tiere empfinden, wahrnehmen, etc.

HS: Das ist ja ein bisschen die Spur von Donna Haraway. Das ist das, wozu Pascal Eitler in seinem Beitrag zu unserem Heft dann aber auch fragt: Naja, was haben die Tiere davon? Wer hat da eigentlich was von? Ich weiß auch nicht, ob es da wirklich ernsthafte Forschung gibt. Aber eine Fantasie ist es natürlich auf einer genetischen Ebene, etwa bei Dietmar Dath. Das ist auch was Synästhetisches. Ich finde das schwierig, weil es ein Versuch ist, sich ein bisschen dumm zu stellen und zu sagen: Wir müssen vom Menschen absehen, aber wir reden ja die ganze Zeit untereinander, da bleibe ich banal. Und da sage ich: Solange wir Menschen miteinander reden, können wir nicht vom Menschen absehen. Da können wir uns noch so Mühe geben, aber das funktioniert nicht.

HG: Aber wir reden ja von Future Bodies. Und ich glaube es gibt einen bestimmten *demand*, das sagt ja, wie wir uns den vorstellen. Wir sind in einer Zeit, wo immer klarer wird, dass das nicht die Fragestellung sein kann. Christopher, du hast ja gezeigt, dass Ability immer wieder an Leistung angebunden wird. Und das ist ja genau das. Es wird immer klarer, wie wir als Menschen in dieser ganzen Welt positioniert sind. Und wie abhängig wir von eben nicht nur menschlichen Beziehungen sind, sondern auch von nicht-menschlichen Beziehungen. Und ich rede da nicht nur von den menschlichen Beziehungen zu Tieren und der Frage, sich in diese einzufühlen. Ich denke z.B. gerade viel über N. K. Jemisins Trilogie, *The Fifth Season*, nach, wo es Menschen gibt, die ganz anders mit der Erde verbunden sind und da auch was auslösen können. Also es gibt in der Science-Fiction schon Vorschläge, den Menschen noch mal ganz anders mit der Erde verbunden zu sehen. Was ich daran spannend finde, ist die Frage der Wahrnehmung. Ob bestimmte Technologien es uns erlauben, unsere

relationalen Verbindungen und Abhängigkeiten auf der Erde nochmal anders wahrnehmbar zu machen.

CC: Ich versuche mal in meiner Antwort darauf einzugehen, dass ich es, ähnlich wie Heiko, als Mensch sehr schwierig finde, nicht anthropozentrisch zu denken. Aber unabhängig davon gibt es ja klassische Ansätze der Auflösung des Individuums sowohl gegenüber anderen Individuen als auch gegenüber der anderen Natur, wenn man so möchte. Ich glaube, was da wirklich interessant ist – und so habe ich das vor dem Gespräch noch nicht sagen können – sind geteilte Körperlichkeit und verteilte Körperlichkeit. Vielleicht könnte man auch die Frage stellen, inwieweit verteilte Körperlichkeit auch zerteilte Leiblichkeit werden kann und verteilte Körperlichkeit geteilte Leiblichkeit. Es gab ein EU-Projekt, was recht systematisch diese Sachen ausgelotet hat. Da wurde ausprobiert, dieselben Interaktionen zwischen Menschen in Präsenz, als Avatare virtuell und per Robotern gemacht werden. Du hattest VR erwähnt. Je mehr ich die nicht als Eskapismus betrachte, sondern eher als Nachbildung der Realität und Verfremdung derselben, dann sind die Interaktionen darin zunehmend, je besser das wird, bedeutungsvoller. Und insofern könnte man natürlich naiv sagen: Gut, du sitzt da einfach und hast eine Brille auf, oder was immer du brauchst, und hockst da alleine rum. Aber man kann ja auch diese virtuellen Beziehungen als relevant betrachten. Und dann kann ich all das, was in der Science-Fiction, aber übrigens auch in der Fantasy, halt schon längst vorgedacht ist, wahrscheinlich auch immer realistischer nachspielen. Die Frage wozu es dient, muss ja nicht sofort angelegt werden. Es kann ja auch einfach um Erfahrungsräume gehen. Was ich ganz spannend finde, ob wir durch genau so etwas, indem wir ein Narrativ reinbringen und in dem wir Interaktionen möglich machen, die jetzt so einfach nicht möglich sind – ich und der Baum, ich und das Haus – ob man sozusagen Nachbildung in einer realen Umgebung hat und neue Handlungsmöglichkeiten, die dann halt fantastisch sind. Also es berichten ja Leute davon, dass sie die verstorbene verunfallte Freundin oder Lebensgefährtin nachbilden, basiert auf Social-Media-Daten. Und dann die Interaktionen mit diesen KI-gestützten Avataren so sind, dass sie wissend, dass das nicht diese Person ist, trotzdem überrascht sind, wie sehr sie sie an sie erinnert. Wenn wir jetzt uns vorstellen könnten, dass das Metaverse eine umfassend sinnliche Erfahrung ist, haben wir vielleicht auch noch mal ganz andere Möglichkeiten, irgendwann dann halt irgendwie einen wunderschönen Herbst- oder Frühlingswald nach einem Regenguss virtuell wahrzunehmen, dabei auch noch riechen, oder sowas. Da ist noch mal eine ganz andere Immersion gegeben als jetzt nur das Visuelle und auch das Haptische.

Aber Geruch haben wir meines Wissens noch nicht bei Virtual Reality. Bisher. Und ich glaube, das wird ziemlich entscheidend für uns sein, weil wir den Geruchssinn unterschätzen und am wenigsten verstehen.

Ich muss ja sagen, dass ich durch dieses Arbeitsgebiet, wo ich eigentlich die ganze Zeit mit Ideen von mehr oder weniger alten oder schon toten weißen Männern fast nur aus den reicheren Ländern zu tun habe, ganz häufig auch zu Veranstaltungen gekommen bin, wo queere Leiblichkeit im Zentrum stand, wo es um Veränderungen des Körpers, z.B. Transition und andere Praktiken sowie Visionen der Körperveränderungen geht, die nichts zu tun haben mit „höher, schneller, weiter". Extremes Piercing, starke Body Modification, alle möglichen Sachen, wo ich sage, das hat überhaupt nichts mit den organisierten Transhumanisten zu tun. Letztere wollen vor allen Dingen unsterblich werden beziehungsweise weiterexistieren und sich geistig verbessern. Die fanden das auch immer extrem albern, wenn auf die Frage „Was würden Sie denn gerne für ein Enhancement haben?" gesagt habe, ich würde halt gerne in Zukunft noch so kicken können wie ein Dreißigjähriger, da würde ich mich wirklich freuen. Und das wäre mir fast lieber, als dass ich jetzt irgendwie die Weltbibliothek in meinem Kopf speichern kann.

HS: Ja gut, da überschneidet sich das natürlich auch. Ich hatte gerade gedacht, wir starren, auch zu Recht, auf eine sehr einflussreiche und überall vernetzte, letztlich aber überschaubare Gruppe von Männern, die ihre Fantasien ausleben und die sozusagen die Idee von dem, was zukünftige Körper sein werden, sehr stark beherrschen. Andere Vorstellungen sind dann schon ganz schwer formulierbar. Bei *body modification* und Transition geht es um Gegenwärtiges. Da möchte jemand einfach mal glücklich im eigenen Körper sein. Das ist natürlich auch mit dem Wunsch verbunden, vielleicht auch das Leben als ein Kunstwerk zu gestalten und auch wiederum zu verlassen. Also auch vielleicht mit dem Gedanken: Ich werde einfach dadurch ein glücklicher Mensch sein, dass ich mich als Kunstwerk verstehen kann. Und dann überschneidet sich das natürlich mit einer bestimmten Art von Enhancement, bei der Leute einfach ihren Körper sofort perfekt gestalten wollen, aber sich auch jeden Tag morgens so disziplinieren, dass sie da erst mal 15 Kilometer laufen. Die gehen ja auch nicht unbedingt immer davon aus, dass sie dadurch leistungsfähiger sind, sondern das ist auch in diesem Moment verhaftet. Gegenwart und Zukunft spielen da eine große Rolle. Wenn wir jetzt auf die Straße gehen würden und Leute hier in Bochum fragen, „Wie stellen Sie sich denn zukünftige Körper vor?", würden einige erstmal so ein bisschen dicke Backen machen, aber viele würden dann, glaube ich, weil das sozusagen schon so vorgedacht ist, in transhumanistische Denkweisen kommen.

CC: Wir haben tatsächlich bei dieser Berliner FUTUREBODY-Veranstaltung, wo es wie gesagt auch um die Gegenwart und Vergangenheit des Körpers ging, länger diskutiert, was denn mit körperlichen Einschränkungen, also sozusagen dem Gegenteil von Enhancement, ist. Es gibt ja z.B. die von viele Leuten als gruselig wahrgenommenen Formen der Selbstverstümmelung. Oder es gibt auch immer wieder die Fragestellung, die teilweise auch von Leuten aus der Cyborg-Szene offensiv aufgeworfen wird, was ihre eigenen Praktiken jetzt eigentlich von den selbst verletzenden Verhaltensweisen unterscheidet. Da geht es um die Entzündungen, das Aufschneiden, die Prozeduren. Also da sind auch Fragen, wie sozusagen die Körpermodifikationen ja ganz anders besetzt werden können als in den von dir angesprochenen, sehr einseitigen Vorstellungen. Ich glaube, der Kern ist, dass die Technik eingesetzt wird, nicht um ein individuelles Höchstmaß an was auch immer zu erreichen, sondern tatsächlich irgendwie eine technische Möglichkeit zur Erweiterung des Mitfühlens. Das fände ich eigentlich so mit am spannendsten. Ich könnte mir durchaus vorstellen, dass in den reicheren Ländern Möglichkeiten geschaffen werden, die sozusagen die Befindlichkeit des Haustieres einem näher bringen. Ich meine viele Leute denken: „Brauch ich nicht, ich weiß sowieso, was mein Hund gerade fühlt“. Aber es gibt sicherlich auch welche, die sagen: „Na gut, wir haben auch sonst Technisierung erlebt“. Früher hat man auch gesagt, ah, ich bin mir sicher, meinem Kind geht es gut. Heute habe ich doch schon lieber, dass mein Kind ein Handy hat und ich auch immer checken kann, wie es dem Kind gerade geht. Und genauso könnten wir uns neue Möglichkeiten geteilten Empfindens und geteilter Wahrnehmung vorstellen, das wäre durchaus etwas Spannendes, was vielleicht sogar unterschätzt wird. Gleichzeitig haben wir aber, glaube ich, in allem, was heutzutage Social ist, Stichwort auch Social Media, etwas, das in einer in vielerlei Hinsicht zu einer einsameren Gesellschaft führt, dass man Nähe empfindet, selbst wenn es technisch vermittelt ist. Insofern auf deine Frage, wo ich da Zukunftsperspektiven sehe: Also ich habe jetzt hauptsächlich wieder so Sachen im Kopf, wo sich Menschen quasi der Maschine freiwillig unterwerfen, um das auszuprobieren. Der Künstler Stellarc ist da ein klassisches Beispiel. Oder noch weitergehend die Einpassung in die Maschine, ob das jetzt positiv ist wie in der frühen Sowjetunion oder negativ wie bei Chaplin. Aber interessant wäre, Technik für Verbindungen zu nutzen, um Empathie oder Telepathie zu ermöglichen, was meistens auch, wie du richtig gezeigt hast, wieder nur auf Mensch-Mensch gedacht wird und nicht Mensch-Tier oder noch was anderes.

HS: In jedem Fall gehen wir, wenn wir in die Zukunft gucken, immer von einem bestimmten Defizit aus. Also wir genügen uns körperlich und

geistig jetzt noch nicht. In den 1920er Jahren hieß das, überhaupt erst Mensch zu werden, Neuer Mensch. Bei Octavia Butler später, im ersten Band der Xenogenesis-Reihe, hat sich im Grunde die Erde zerstört. So ein paar Menschen werden von Außerirdischen geschnappt, eingefroren und wieder aufgeweckt. Und die Heldin der Geschichte kriegt sozusagen den Auftrag, einen Trupp an Menschen dazu zu bringen, auf die mittlerweile regenerierte Erde zurückkehren, um da wieder leben zu können. Und gerade in dieser ersten Folge mit dem Titel „Dawn" ist es so, dass das Projekt an den Menschen selbst zu scheitern droht, an der Aggressivität der Männer und an etwas, was aber auch im genetischen Material drinsteckt, was es ihnen unmöglich macht, zusammenzuarbeiten. Und dann müssen die Außerirdischen eingreifen. Also das ist sozusagen der Moment, wo der Heldin dann auch klar wird, und das ist auch wahnsinnig gut erzählt, dass die Ausstattung des Menschen einfach nicht ausreicht für die Art und Weise, wie wir gerne zusammenleben wollen. Und ich frage mich, ob wir auch immer mehr über so etwas nachdenken sollten, über diese Verbesserung des Körpers aber auch der Menschen insgesamt, ob wir uns selbst so sehr misstrauen. Das steckt ja auch in diesem Neue-Menschen-Gedanken und natürlich der Eugenik drin, dass wir einfach noch nicht bereit sind: Wir sind nicht fähig für das, was wir eigentlich vielleicht auch an guten Leben führen könnten. Und auch andere Versprechungen reichen nicht mehr. Wir glauben nicht daran, wegen schlechter Erfahrung, dass so etwas wie die Revolution funktioniert. Also müssen wir da direkt ansetzen an diesem Körper. Und wenn das nicht Außerirdische machen, dann müssen wir das selber machen.

CC: Ja gut, das war ja auch eine beliebte Erzählung, dass die Perfektibilität der Gesellschaft durch die Perfektibilität des Körpers ersetzt würde. Da gab es z.B. eine politisch groß aufgezogene EU-Veranstaltung Mitte der 2000er, auch intellektuell beeindruckend mit bedeutenden Naturwissenschaftler:innen, aber auch Helga Nowotny. Die haben genau solche Themen diskutiert. Richard Saage macht das besonders deutlich; er sagt, im Grunde genommen, es gab die alte Version, da spielten die Gesundheit des Körpers und gewiss auch eugenische Ideen immer eine gewisse Rolle. Aber zentral war in der Aufklärungstradition immer der gesellschaftliche Wandel. Er betont die Doppelnatur des Menschen, gesellschaftlich und körperlich. Aus den von dir genannten Gründen fällt es mir im Moment schwer, überhaupt über die Thematik nachzudenken in Bezug auf die seltsame, sich faschisierende Körperlichkeit, überwiegend männlich, wo wir eigentlich ganz viel von dem haben, was ganz altmodisch nach Freud klingt, oder diese Art von verunsicherter männlicher Körperlichkeit im Faschismus. Gleichzeitig hat man eine extreme Liberalisierung von nicht

faschistischen oder sogar deklariert antifaschistischen Körperlichkeit, bei der man auch teilweise wieder Fragezeichen dahinter setzen muss, weil das im Rahmen einer neoliberalen Subjektivität stattfindet, die durch eine extreme Einsamkeit und Verunsicherung geprägt ist. Das klingt jetzt ein bisschen hart und damit möchte ich nicht diese ganze neue Körperlichkeit kleinreden, aber dadurch, dass sie, und da bin ich ganz pessimistisch, eine kleine Avantgarde sind, gibt es bei sehr vielen sozusagen Verunsicherungen und Anpassungen an dieselbe, bei denen ich den Eindruck habe, das ist auch keine befreite Körperlichkeit. Aber letztlich bin ich da wahrscheinlich dann doch schon eher ein Kind von Marcuse als von Foucault. Deswegen nehme ich an, dass eine neue Körperlichkeit ja auch etwas mit Glück, Selbstakzeptanz und all dem zu tun haben sollte. Und ich bin vielleicht sogar so naiv anzunehmen, dass, wäre dies herstellbar, auch die Gesellschaft radikal verändern würde. Aber die empirische Realität erscheint mir im Moment sehr anders und technikgetrieben. Und da erscheint mir, aus wieder einer ganz altmodischen Post-Achtundsechziger-Sicht gesehen, vieles auch einfach reaktionär. Gerade auch körperpolitisch ist es eine sehr dramatische Zeit, weil einerseits der kriegerische Körper wieder eine Renaissance feiert und gleichzeitig geschlechterpolitisch und in Bezug auf Sexualität Sachen stattfinden, die sicherlich für den christlichen Westen oder sogar menschheitsgeschichtlich neu sind. Das ist eine Gemengelage, die interessanterweise auch mitten im Kern der aktuellen politischen Großdebatten steht. Dies schon dadurch, dass sowieso schon seit geraumer Zeit körperliche Themen im Rahmen dieser Kulturkämpfe ins Zentrum der politischen Debatten gerückt und auch Gradmesser dafür sind, welchen gesellschaftlichen Lagern man sich zugehörig fühlt. Übrigens Lager, die sich sozioökonomisch teilweise stark ähneln. Es ist relativ egal, jetzt mal nach einer altmodischen marxistischen Analyse, ob ich jetzt eher ein ländlicher, traditionell bürgerlicher, autoritätshöriger Bürger bin oder einer, der eher in der Innenstadt wohnt und Grüne wählt. Also ich möchte sie keineswegs gleichsetzen, aber es ist sehr interessant, dass sich sozusagen zwei stark bürgerlich geprägte Milieus, parteipolitisch AfD und Grüne, besonders scharf über wesentlich körperpolitische Themen streiten. Das ist ja ein ganz zentraler Aspekt. Das finde ich gerade sehr schwierig, das zusammenzudenken mit irgendwelchen Verbesserungsüberlegungen, weil es ja gerade in diesem Bereich so deutlich wird, dass unsere Gesellschaften massiv und auch hasserfüllt gespalten sind. Wo das eine, was als Verbesserung gesehen wird, von den anderen als Perversion gesehen wird oder als etwas, was feindlich ist. Das klingt jetzt ein bisschen so, als würde ich hier *bothsidesism* machen. Aber es ist schon so, dass es halt im Kern um körperpolitische Fragen geht. Mir fällt es recht schwer, dass auf die auf die momentane Fragestellung der

Körpermodifikation zu beziehen. Das, was ich überhaupt noch gar nicht aufgebracht habe, ist der Leib in der Welt (auch) körperlicher Arbeit, von positiven Visionen wie bei Alexei Gastews Ideen und Experimenten in der frühen Sowjetunion oder auch dem, was in Deutschland seit einer Weile unter dem Label „Industrie 4.0“ diskutiert wird bis hin zu Entwicklungen in Amazon-Lagerhallen, wo die Algorithmisierung der Arbeit ein neues Mensch-Technik-Verhältnis zum Teil mit all dem Elend hervorbringt, das wir mit vergangenen Zeiten assoziieren. Da feiern noch einmal die alten „Modern Times“ fröhliche Urständ. Da fällt es mir auch leichter, diese Entgegensetzung von Gesellschaftsverbesserung versus Körper-Verbesserungs- bzw. Enhancement-Sachen relativ klar und fast altmodisch kapitalismuskritisch anzuwenden. Bei den anderen Themen wie die Faschisierung des Körpers und die Kritik althergebrachter Normen fällt es mir weitaus schwieriger. Wobei bei Letzterem ganz altmodisch Selbstbestimmung über den Körper weiterhin als Leitschnur dienen kann. Wenn es dann um praktische Anwendungen geht, bin ich teilweise unsicher, was ich davon zu halten habe, wenn es um die Technisierung des Körpers geht. Und wie gesagt, ich weiß nicht, ob ich da nicht auch einfach ein paar Jahrzehnte zu alt für bin, muss man sich ja vielleicht auch irgendwann mal eingestehen.

HS: Naja. Die Themen altern ja nicht. Man kann da ja auch Klaus Theweleits *Männerphantasien* von 1977 ins Spiel bringen. Interessant ist erst mal, finde ich, einfach zu konstatieren, so wie du es auch gesagt hast, dass sich da momentan tatsächlich alles um den Körper dreht. Das muss man ja erst einmal formulieren. Da haben wir das transhumanistische Lager, mit unterschiedlichen Strömungen natürlich auch, die über etwas Zukünftiges nachdenken. Wir haben die eher posthumanistischen Leute, wo auf eine vielleicht optimistische Art und Weise darüber nachgedacht wurde, so in Post-Haraway und -Braidotti-Zeiten, wie sich neue Körper auch mit einer größeren Autonomie und vielleicht mit einer größeren subversiven Kraft herstellen können. Das geht einher, sozusagen als Gleichzeitigkeit des Ungleichzeitigen, mit Körperkonzepten, von denen wir mal gedacht haben, die sind doch total überwunden. Aber wir ahnen schon, dass es überhaupt nicht der Fall ist und die viel stärker sind jetzt auf einmal, bis hin zu den Arbeitsbedingungen bei Amazon, die eigentlich ganz nah um die Ecke sind.

CC: Ich habe noch nicht auf den Punkt gebracht, was ja eigentlich bei dieser zentralen Bedeutung von körperpolitischen Momenten festzustellen ist. Ich habe jetzt gerade Angela Davis auf dem Oranienplatz in Berlin gesehen. Was wir gerade haben, ist, dass der traditionell als deviant oder

minderwertig gesehene Körper, der weiterhin auch real gefährdet ist, verstärkt als die Hoffnung für den gesellschaftlichen Wandel betrachtet wird. Wenn gesagt wird, dass schwarze queer-feministische Menschen an der Spitze der Bewegung – wenn man diese Formulierung überhaupt wählt – stehen sollten und damit also die weißen, männlichen, heteronormativen Körper eben da nicht sein sollten, dann haben wir doch den Anspruch, dass die Präsenz bestimmter Körper im öffentlichen Raum und in der politischen Bewegung entscheiden über den gesellschaftlichen Wandel.

Das erscheint mir tatsächlich auch wirklich ganz interessant, dass, im Grunde genommen, durch diese, im weitesten Sinne identitätspolitische Debatte – meines Erachtens völlig zurecht – darauf hingewiesen wird, wer im öffentlichen Raum was tun sollte und über was sprechen sollte. Da kann man natürlich auch sagen, dass eine körperpolitische Frage eigentlich ins Zentrum der liberalen Anerkennung gerückt ist, dies aber meines Erachtens im klassischen, hier revolutionär gedachten, gesellschaftsverändernden Sinne. Weil ich glaube, es ist wirklich jetzt fast ein Allgemeinplatz, dass bestimmte Menschen die antikapitalistische Bewegung auf gewisse Weise anführen müssen. Ich bin sehr überrascht, wie mich deine Frage angeregt hat, deswegen ging das Gespräch, glaube ich, noch weiter in diese Richtung. Ich dachte mir zuerst, oh Gott, das habe ich eigentlich so häufig gehört, diesen Gegensatz von gesellschaftlichem und körperlichem Wandel. Aber sobald ich einen Schritt über dieses eigentlich sehr kleine Themengebiet, das mich da immer beschäftigt hat, also vor allem Bio- und Neurotechnologien, hinausgehe, wird es, denke ich, extrem spannend, die Frage zu stellen, inwieweit die Veränderung des Körpers ganz zentral ist für gesellschaftliche Veränderung.

Ich habe gerade durch unser Gespräch das schöne Gefühl, dass mir ganz viele Sachen, die mir eigentlich so vertraut sind, auf neuartige Weise im Gehirn rumgequirlt wurden. Im Grunde genommen lässt sich die Masse natürlich als verteilte Körperlichkeit und geteilte Körperlichkeit verstehen: als über die Emotionen geteilte und über die Aktionsmöglichkeiten verteilte Körperlichkeit.

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Mediated Trans Futurities

Sarah Horn

English Abstract: For trans and gender non-conforming people a future body is not necessarily a spectacularly enhanced or technically optimized but, above all, a liveable one. Hormones like testosterone and estrogens sometimes materialize the promise of a trans futurity with and for that particular body. At the same time, the bodily effects of these hormones are not foreseeable and, all the more, not predictable, even though video blogs that document gender transitions might give this impression at first glance. The article takes a closer look at the phenomenon of trans vlogging and discusses trans vlogs as participating in practices of imagining and enabling im/possible futures. The interest is the entanglement of media practices of self-documentation, hormonal alterations of bodies, processes of gendering and racialization within these practices and their effect on temporality: Which bodies have a future available at all – as uncertain and precarious as it might be?

Does it get better?

For trans and gender non-conforming people a future body is not necessarily a spectacularly enhanced or technically optimized but, above all, a liveable one.[1] While not all trans people aim to alter their bodies via hormones (and/or surgeries), many do so to improve their quality of life on a very existential level. Altering gendered characteristics of one's body might help to feel more comfortable with it in the future and might enable to imagine a future at all – one that can be lived according to one's gender. Restrictions on having or getting access to gender confirming hormones therefore makes a future unimaginable and in so doing threaten trans lives. Considering the desire for a body that resonates visually, acoustically, and sexually with one's gender, hormones like testosterone and estrogens sometimes materialize the promise of a trans futurity *with* and *for* that particular body. At the same time, the bodily effects of these hormones are not foreseeable and, all the more, not predictable. There is no guarantee that the hormonal effects on the body happen as might be desired – if they occur at all. The hormones propel bodily, and therefore gendered becomings that are not linear, let alone directional or teleological. While on the one hand the injection (or application) of hormones engenders trans futurities – or, as Jack Halberstam puts it: "[t]he transgender

1 Judith Butler: Notes Toward a Performative Theory of Assembly. Cambridge, MA, London: Harvard University Press 2015.

body has emerged as futurity itself,"[2] – on the other hand it also produces specific precarities: In cis-sexist and heteronormative societies being visible as a trans person, which regularly means inhabiting a body with characteristics that do not (seem to) fit a binary gender system, can be life threatening, too – endangering an individual future.

This holds even more true for black and trans people of color, since the fulfilment of gender expectations is always measured against normative, speak: *white* gendered bodies.[3] In his historical study C. Riley Snorton shows how western gender ideals are established in colonial exploitation of medicalized black bodies. With reference to Hortense Spiller he analyzes "sex and gender as racial arrangements wherein the fungibility of captive flesh produced a critical context for understanding sex and gender as mutable and *subject to rearrangement in the arenas of medicine and law*."[4] Invested in historical analyses of such medical studies in the 19th century, Snorton reassembles past narratives of trans lives in these heteronormative, colonial settings and aims to imagine other temporalities. He traces temporalities that defy the logics of momentary condolence via public remembrance only after non-white trans people are being murdered.[5]

Based on an understanding of gender as always already entangled with race, "as a tool of colonial domination and the construction of the colonial other,"[6] and in the context of everyday trans hostility, the promise of a better future through hormone therapy, of a thus somehow biochemically enabled future is not self-explaining. Rather, the prospect of a future is not a taken-for-grantedness, not a simple automatism of linear progression of time – unlike the "It gets better"-mantra by Dan Savage and others, who in a 2010 social media campaign shared their stories of how life as a gay or queer person got easier for them after literally having survived

2 Jack Halberstam: In a Queer Time and Place. Transgender Bodies, Subcultural Lives, London, New York 2005, p. 18.

3 I put 'white' in italics to denote the construction of the category and at the same time avoid charging it with a gesture of empowerment, cf. Maureen M. Eggers/Grada Kilomba/Peggy Piesche/Susan Arndt: »Konzeptionelle Überlegungen«, in: Maureen M. Eggers/Grada Kilomba/Peggy Piesche et al. (eds.), Mythen, Masken und Subjekte. Kritische Weißseinsforschung in Deutschland, Münster: Unrast 2020, pp. 11-13.

4 C. R. Snorton: Black on both Sides. A Racial History of Trans Identity, Minneapolis, London: University of Minnesota Press 2017, S. 12, emphasis sh.

5 Cf. ibid., p. 14.

6 Jonah I. Garde: »Provincializing Trans* Modernity. Asterisked Histories and Multiple Horizons in *Der Steinachfilm*«, in: TSQ: Transgender Studies Quarterly 8 (2021), pp. 207-222, here p. 211.

being the target of bullying in high school.[7] Jasbir Puar and Tavia Nyong'o among others have famously critiqued this project that, despite opening "space for the expression of public anguish and collective mourning,"[8] completely dismisses the fact that "[l]ots of folks, particularly the gender nonconforming and/or trans, never 'grow out' of the kinds of social reprisals for being physically different."[9] The "It gets better"-narrative of improvement does not reflect the manyfold entanglements of sexuality and desire with other social categories like race, class and ableism. It therefore chimes in with the *white* assimilationist gay rights movement and its blind spot concerning the problematic assumption that 'having rights' in the first place is self-evident.[10] This presumed status as a subject, as citizen, is constitutively entangled with an exclusive, heteronormative understanding of time as enfolding in these narratives of growing up, getting married, founding a family.[11]

Considering these complex enmeshments of a certain temporality with colonial and heteropatriarchal structures, I understand future not as a temporal realization of modernist progress that enfolds along parameters of technical feasibility, although technological conditions in terms of digital media and endocrinological knowledge are central to my argument.[12] With the plural of futures, I aim to trace different imaginations and realizations of livable space-times that emerge within technological conditions of media and medical practices, and that challenge these normative understandings of time while acknowledging that the perspective of (not certainly) having a future is bound to social hierarchies and exclusions. In this sense, I want to take a closer look at the phenomenon of trans vlogging and discuss trans vlogs as participating in these practices of imagining and enabling im/possible futures. My main interest is the entanglement of media practices of self-documentation, hormonal alterations of bodies, processes of gendering and racialization within these practices and their effect on temporality: Which bodies have a future available at all – as uncertain and precarious as it might be?

7 Cf. It Gets Better Project: It Gets Better: Dan and Terry. YouTube 2010, https://www.youtube.com/watch?v=7IcVyvg2Qlo, 23.09.2021.

8 Jasbir Puar: In the wake of It Gets Better. The Guardian 2010, https://www.theguardian.com/commentisfree/cifamerica/2010/nov/16/wake-it-gets-better-campaign, 05.03.2018.

9 Tavia Nyong'o: School Daze. Bully Bloggers 2010, https://bullybloggers.wordpress.com/2010/09/30/school-daze/, 23.09.2021.

10 Cf. J. Butler: Notes Toward a Performative Theory of Assembly.

11 Cf. Lee Edelman: No Future. Queer Theory and the Death Drive, Durham, London: Duke University Press 2004.

12 Whereby the endocrinological knowledge production in itself is entangled with european ideas and ideals of modernity, cf. J. I. Garde: Provincializing Trans* Modernity.

Trans vlogging with testosterone

With trans vlogs I refer to videos on YouTube uploaded by trans people who document their hormonal induced gender transition online.[13] Those videos range from diary-like narrations of recent events or daily-life experiences to explicitly giving advice in navigating administrative and social obstacles in a cis-heteronormative society and to updates on physical or emotional changes due to hormonal treatment.

Gorillashrimp is one of these vloggers.[14] In several update-videos he documents his experiences with taking testosterone. Regularly, he highlights the physical changes that occur over a certain time span, usually a few months or years on testosterone. The chronology of these videos, each titled after these very same time periods, gives the impression that the process of a gender transition - and thus gender itself - is coherent and consistent in itself. It seems, as if the hormone would self-evidently cause bodily changes according to the supposedly always already known gender, and as if a transition proceeds from a unique starting point – regularly the first hormone dose – via an expected course to a specific end. With a closer look at a selected video by gorillashrimp, I would like to challenge this common metaphorical narrative of gender transitioning as a distinct and trouble-free 'journey' on a foreseeable path.[15]

It is very common in the trans vlogs to let the narrative of one's gender transition more or less implicitly start with the first dose of hormone replacement therapy. For many trans vloggers this date holds an existential importance which is why they celebrate it as a (second) birthday – the start of a new (state of) life. On his one-year anniversary on testosterone, gorillashrimp records a euphoric inventory of the changes to his body that have occurred up to that point.

The video "3.21.15 - 1 Year on Testosterone - FTM Transition Update - List of Changes Throughout the Past Year"[16] is nearly 19 minutes long and

13 In the following I only relate to trans vlogs about hormonal treatments with testosterone. This focus takes into consideration the specific connotation of testosterone with masculinity and maleness and the stereotypically ascribed attributions of activity, (self-)creation and mastery.

14 I refer to the vloggers by the name of their channels to emphasize the hormonal *and* media effects of the vlogs on the subjectivations of the vloggers as trans.

15 Especially in reference to trans and non-binary visibility on digital media platforms this narrative of gender transition as solely being easy or pleasing finds itself increasingly exaggerated and contorted to fuel hostile allegations of transness being a mere media hype.

16 gorillashrimp: 3.21.15 - 1 Year on Testosterone - FTM Transition Update - List of Changes Throughout the Past Year. YouTube 2015, https://www.youtube.com/watch?v=ThGxWjmVis0, 05.03.2018.

not cut, thus apparently recorded without interruption. We see a young, able-bodied, *white* man in a black muscle shirt - and, as will be seen later, blue jeans – who sits in an apparently private living room and faces the camera head-on. In a static semi-close-up shot, the viewers see and hear him talk about how his body has changed over the past 12 months. In order not to forget any of these many observations, he has prepared a handwritten list of them. Generally amused and sometimes even euphoric, he comments on the changes he has noticed: The shoulders became broader and, like the rest of his body, more muscular; his neck and jawline are more prominent; his feet have grown; his voice is deeper; the hair on his arms and legs as well as on his belly and chest, is thicker and darker. Also, he has grown a beard and is not menstruating anymore. While reporting this, gorillashrimp does not remain in a sitting position. He stands up and turns his back to the camera, demonstrating the heavily masculine connoted V-shape of his upper body; he flexes his arms so that the veins stand out more clearly; he cards the leg of his trousers to show the hair on his legs; and he brings his face and forearm close to the camera so that the increasing hair growth can be examined there too.

In summary, much of what gorillashrimp had hoped and wished for before he started taking testosterone has indeed occurred. The hormone functions properly in masculinizing the vloggers body. Accordingly, as Laura Horak would argue for trans vlogs in general, this and other videos of gorillashrimp's transition operate along a hormonally induced logic of progress:

> [M]ost transition videos operate according to a progressive temporality we might call "hormone time." Time begins with the first shot of testosterone [...] and is measured against that date, even years afterward. [...] While, like all narrative, hormone time simplifies, this insistently affirmative structure is powerfully enabling to trans youth trying to imagine a future.[17]

"Hormone time," she continues, "appropriates the 'straight' temporality of progress for radical ends-proving that trans self-determination is not only possible but viable and even joyful."[18] She thus follows the extensive studies on trans vlogs by Tobias Raun, who also emphasizes the vloggers' self-determination in the process of gender transition:

17 Laura Horak: »Trans on YouTube. Intimacy, Visibility, Temporality«, in: TSQ: Transgender Studies Quarterly 1 (2014), pp. 572-585, here p. 579-580.

18 Ibid., p. 581.

> Thus, representation and transformation is not something 'done' to the vloggers but is part of an active process of self-determination through the vlog as an important site for *working* on, as well as *producing* and exploring, the self.[19]

Both researchers explain the popularity, the individual significance, and the political relevance of trans vlogs with the affirmative documentation of a teleological transition and its self-determined completion. From this perspective, however, the media-specificity of self-documentation in trans vlogs is reduced to a mere instrumentality of the involved media. When Raun states, "the vloggers blend flesh and media, skin and screen, to help them form (new) identities."[20], the hormones and the vlogs like the scalpel are simply tools up for a completely intentional usage.

Proceeding from the works of Raun and Horak, I aim to add yet another approach to trans vlogs to grasp their specific media effects on gendered becomings and their politization. If one takes into account a constitutive entanglement and performativity of the interplay between gender and media, it becomes clear that the individual videos, YouTube as a platform, and testosterone together produce media and bodily effects that are at least partially beyond the control of the vloggers.[21] This is also the case with gorillashrimp, who, for all his joy about the appreciated changes so far, also wonders about various physical phenomena.

He not only expresses surprise about having an adam's apple now, "which I didn't think was gonna happen, but it did."[22] He is also irritated about the hair growth on his legs, which is not very pronounced and still patchy. While bringing in his hands together above his thigh to trace the direction of the increasing hair growth, he remarks: "It's still not completely there, it's still not. And I've got some weird bald spots on my legs, too. But I think that'll eventually fill in." And although he is very happy about the fact that his feet have grown, he is slightly disappointed to probably not "get into the men sizes."

Whether he will ever be able to buy shoes in men size, if the hair on his legs will continue to grow or not, or whether it will run out on his head - these are just some of the uncertainties in a gender transition with testosterone. These uncertainties and the fact that he documents them

19 Tobias Raun: Out Online. Trans Self-Representation and Community Building on YouTube, Abingdon, New York: Routledge 2016, p. 118, emphasis sh.

20 Ibid., p. 106.

21 Cf. Kathrin Peters/Andrea Seier: »Gender & Medien. Einleitung«, in: Kathrin Peters/Andrea Seier (eds.), Gender & Medien Reader, Zürich, Berlin 2016, pp. 9-19.

22 Here and in the following I quote from gorillashrimp: 3.21.15 - 1 Year on Testosterone - FTM Transition Update - List of Changes Throughout the Past Year.

publicly, however, do not query his transness. "It is what it is," gorillashrimp notes with a shrug. In the practice of self-documentation via vlog, these uncertainties and seeming gender inadequacies become affirmable, since they do not lead to the derecognition of being trans by others. This fear of non-recognition is often shared in relation to the medico-therapeutical context where uncertainties or ambiguities about one's (gendered) future generally undergird the acknowledgement of a trans status, while a body with 'proper' gender markers is still the ideal goal. Therefore, a body with – in reference to a binary gendered system – ambiguous gender markers is seen as unwanted and undesirable, as literally in a transitional state that finally will be overcome. This assumption regularly completely disregards the actual feelings of the respective person towards their body. Trans and gender non-conforming people who strive for a hormone prescription nonetheless need to meet these demands of medical and therapeutical institutions, which means to articulate being undoubtedly sure about one's future gender and gendered body as fitting to a normative binary. Whereas the requirement for being officially acknowledged as trans therefore includes the unambiguous wish to fulfill the expectations of binary gender, on YouTube anyone who calls themselves trans and enters the online community by uploading appropriately titled or keyworded videos *is* trans.

The chronology of the video uploads and the transition narratives that seem successful at first glance, such as the one by gorillashrimp, nevertheless produce uncertain futures. For the rhythms of hormone therapies and the rhythms of update videos make it clear that this future is open in a thoroughly precarious way: the transition finds no conclusion insofar as the hormones must be taken permanently. Also, a YouTube channel knows no capacity limits, so that another update video can always follow even after years of (uncommented or unannounced) pause.[23] In addition, for trans people who take hormones permanently - and that is by no means all of them - it is not certain whether the type of therapy will work in the long term: Dosages have to be adjusted, compounds changed. Endocrinological, i.e. hormone-scientific long-term studies on the therapy have only existed to date in rudimentary form. Gender and the future thus do not become more secure or stable even with hormonal treatment and physical changes, but remain - for differently marginalized persons in different intensities - precarious.

23 The vlogger Wish I was Jim uploads an update video after a break of over six years, cf. Wish I Was Jim: TEN YEARS ON TESTOSTERONE. YouTube 2019, https://www.youtube.com/watch?v=5ARSF7ZKAs8, 16.06.2020.

Queer temporality of trans vlogs

For a long time, a personalized graphic reading “Some guys go through puberty twice” decorated the main page of gorillashrimp’s YouTube channel. The affirmed 'second puberty' points to those aforementioned temporal instabilities of gender transitions with testosterone. From a Queer Theory perspective, Jack Halberstam has identified the importance of adolescence in strictly marked distinction from responsible adulthood as a constitutive element of heteronormative temporalities. Subcultural practices such as punk music and drag shows, however, softened this separation by aesthetically extending adolescence and therefore decoupling aging from the heteronormative logics of reproduction:

> In Western cultures, we chart the emergence of the adult from the dangerous and unruly period of adolescence as a desired process of maturation; and we create longevity as the most desirable future. [...] this life narrative charts an obvious transition out of childish dependency through marriage and into adult responsibility through reproduction.[24]

The trans YouTube videos could be understood as such a subcultural practice that extends puberty and undermines normative temporality. However, Julian Carter suggests that the glorification of continued adolescence is more problematic for many trans individuals than for cis-lesbian or cis-gay youth, as it is precisely future change that matters to them. Carter writes:

> When the future is refused, the past loses its dynamic potential and the subject finds himself stuck on the margins of time and social relationship. Making up for lost time requires a return with a difference, rather than an arrest.[25]

For him, temporalities of transitions are not characterized by a postponement of growing up, but by complex foldings that contain triumphant advances and uncertainties in simultaneous interlacings. Instead of 'hormone time', he speaks of “transitional time”[26], capturing “triumphalist and invaginated time as co-existing, a convergence which challenges the assumption that they are opposed and mutually exclusive modes of

24 J. Halberstam: In a Queer Time and Place, pp. 152-153.

25 Julian Carter: »Embracing Transition, or Dancing in the Folds of Time«, in: Susan Stryker/Aren Z. Aizura (eds.), The Transgender Studies Reader 2, New York, London 2013, pp. 130-143, hier p. 139.

26 Ibid., p. 141.

temporality."[27] In Carter's analysis of a dance performance, joy and uncertainty can coincide.

The trans vlogs allow not only for a coincidence but for the *affirmation* of this temporal complexity, of a "return" to puberty "with a difference." Moreover, even the uncertainty about whether this second puberty will actually be the last one can be affirmed. A second one could be followed by a third or fold into adulthood over and over again. The trans vlogs keep such multiplications open. But they also problematize the taken-for-grantedness of a future at all, as I would like to show with another update video that allows me to address the complex structure of self-documentation, temporality, and subjectivation not only as trans but as black trans person.

At first glance, the video "Week 40 on T: Racism as Black FTM"[28] by itsGOTtobegroovy does aesthetically not differ from the update video by gorillashrimp: The video shows the vlogger in a setting that seems to be private, we see his head and shoulders. He addresses the report about the changes he observed in his body during the past months on testosterone to an audience that might have made similar experiences, and thus, like gorillashrimp, implicitly refers to an online trans community that he performatively produces via this addressing.[29] But differing from vlogs by *white* vloggers like gorillashrimp, for itsGOTtobegroovy it is not the physical changes that build the main aspects of his update video after being 40 weeks on testosterone. As the title prominently states, it is the racism he experiences that keeps playing on his mind and that shapes his review of the past 40 weeks.

To address the specific media setting of the trans vlog and its temporalities, I want to highlight a short sequence of this video where these entanglements densify. Other than gorillashrimp's extensive report on many different physical aspects, in itsGOTtobegroovy's update it is only the beard that gets explicit attention as bodily change throughout the recent weeks. In the exact same posture, both gorillashrimp and itsGOTtobegroovy bring their chins close to the camera to document the effects of testosterone on their facial hair growth. But whereas gorillashrimp turns away the light source to avoid an overexposure that would make it difficult to perceive the hair on his light skin, itsGOTtobegroovy changes the visual register fundamentally. While murmuring, "Actually, I saw [indistinct, probably a name, sh] do this – once...", he is switching the

27 Ibid., p. 134.

28 itsGOTtobegroovy: Week 40 on T: Racism as a Black FTM. YouTube 2010, https://www.youtube.com/watch?v=XUJIsKYyaKY&, 08.06.2018.

29 Cf. T. Raun: Out Online.

recording to night vision. With the camera (software) now being able to better register contrast under the light conditions in the room, the black hair on his face and chin becomes clearly visible: “So, you can see it here – a little mustache. I’ve been shaving it. But also...” Then he picks up the camera and moves it under his chin: “…right here, I got so much of that [beard growth, sh].”

Figure 1: Screenshot from itsGOTtobegroovy: Week 40 on T: Racism as a Black FTM

Even though this sequence in night vision is only a few seconds long, it fundamentally shifts the focus of the update video: Shortly after itsGOT-tobegroovy puts the camera back on the desk, switches the recording mode to common light spectrums and makes quick remarks on his plans to shave in the next days, the video cross-fades to a supposedly later moment of his recording where he starts telling about racist incidences he experiences more regularly. His “week 40 on T” update is as much about gendered bodily changes as about the racialization that comes along with being recognized as black male in public. He reflects on the surprise and

anger these racist confrontations provoke in him: “It's really annoying, it's really frustrating that I am being viewed more and more as – I don't know... An oddity? A threat?”

With the aesthetic of night vision that resembles the optics of surveillance techniques, itsGOTtobegroovy perceives the structural hierarchies of visibility, wherein ‘being viewed’ also means ‘being made visible’ as a black man. As the cross-fade indicates, he does not only perceive this moment of racialization and sexualization through this visual mode, but he implicitly comments on it when he starts reflecting on the racist confrontations that differ since he is being perceived as male more regularly in public. With his video he not only documents these confrontations but articulates the racist stereotyping of angry or threatening black maleness as effect of these very documentary media practices that regularly engender non-white and especially black bodies as racialized others, as threats.[30] This stereotyping puts black masculinity to a higher risk of premature death due to structural racism and police violence. Also, being (made) visible via documentation practices functions as policing operation prior to physical attacks insofar as it means becoming detectable and locatable.

With regard to black trans masculinities in particular, Kara Keeling connects a problematization of visibility explicitly with potentials of a queer temporality. Keeling’s reading of the documentary “The Aggressives” (Daniel Peddle, USA 2005) suggests a mode of referencing a future that might not underly these logics of visibility:

> On th[e] terrain [of power and the struggle for hegemony], the benefits of visibility are unevenly distributed. In the colonial world [...], the hypervisibility of blacks and the organizations of space that rationalize their hypervisibility are crucial techniques through which colonial power and white supremacy were maintained. Insofar as colonial logics can be said to undergird present socio-economic relations, black people can become visible only through those logics, so danger, if not death, attends every black’s appearance. Yet precisely because what is visible is caught in the struggle for hegemony and its processes of valorization, one cannot not want the relative security promised by visibility.[31]

Keeling explicitly connects the double-edged effects of visibility to questions of temporality and the im/possibility of a future. Reflecting on the

30 Cf. Simone Browne: Dark Matters. On the Surveillance of Blackness, Durham, London: Duke University Press 2015.

31 Kara Keeling: »Looking for M—. Queer Temporality, Black Political Possibility, and Poetry from the Future«, in: GLQ - A Journal of Lesbian and Gay Studies 15 (2009), pp. 565-582, here p. 579.

disappearance of one of the protagonists from the film – Keeling names them M— – Keeling drafts a mode of livable in/visibility for them. Combining Frantz Fanon's postcolonial approach to temporality with Lee Edelman's queer critique of a "reproductive futurism"[32], Keeling suggests a caring instead of a surveilling mode of visibility which would not ask *where* M—is, but *when* M—could be to live under less violent – speaking of anti-black and trans violence – conditions.[33] This mode of caring is characterized by a sensitivity for the powerful and even violent effects that pervade processes of knowledge production: Keeling herself describes the awareness of somehow being an accomplice to institutions of surveillance to the extent that her practices as a scholar do not operate outside of these logics when investigating M—'s disappearance from the film.[34] By asking *when* M—is instead of *where* and thereby to reject dragging M—(back) into visibility, Keeling problematizes and politicizes the supposed self-evidence of liberal politics where being (made) visible, being locatable and clearly identifiable are the necessary preconditions of being able to articulate political demands for a (better) future.

itsGOTtobegroovys self-reflective comment on the visual regime of racialization encounters its effects by implicitly articulating anger as an effect of these very conditions. With itsGOTtobegroovy documenting his gender transition as pervaded by structural racism and organized according to the "representational regime of racial difference"[35], it becomes clear that the possibility of a future for black trans people does not solely rely on the access to hormonal therapy. Being a "figure of radical alterity,"[36] he as a black gay trans man belongs to those, "for whom the future remains to be won in each moment."[37] Therefore, his videos and the

32 L. Edelman: No Future.

33 Keeling points to parallels and tensions between Edelman's and Fanons's works that are each invested in figuring out how to disrupt or reject heteronormative respectively colonial temporalities. Whereas Edelman's queer polemical figure of radical alterity capable of such a potential refusal has often been criticized for not recognizing the implications of race in the questions of rejecting a future that holds no place for oneself, Fanon again imagines his postcolonial revolutionary subject as cis male and invested in heterosexual libidinal economies. Keeling elaborates on these tensions and suggests a black queer-feminist perspective on temporality mindful of these exclusions.

34 Cf. K. Keeling: Looking for M—, p. 577.

35 Stuart Hall: »The Spectacle of the 'Other'«, in: Representation. Cultural Representations and Signifying Practices, London, Thousand Oaks, New Dehli 1997, pp. 223-290, here p. 256.

36 K. Keeling: Looking for M—, p. 568.

37 Ibid.

projection of gender transition are – in yet another dimension than the ones by gorillashrimp – speculations on the possibility of a future.

Daring trans futurities

The futures of the testosterone update videos do not proceed teleologically, like Raun, Horak and others argue. Although the media practices of self-documentation via transition vlogs somehow enable a possible future as trans, these very practices also put potential futures at risk, as they make life more vulnerable and precarious and colonial shaped media technologies amplify vulnerability to life-threatening intensities by rendering certain bodies visible especially for policing and surveillance. Other than gorillashrimp, who at the end of his video shares his optimism on an individual trans futurity especially with those who might not see this possibility at that moment, itsGOTtobegroovy ends a video recorded 5 years after his 40 weeks on T-update stating: “I wish I could say it gets better but it doesn't.”[38]

With regard to the often conventional aesthetics and narrations of the trans vlogs, Horak claims: “criticizing hormone time for not being 'queer' enough misses the life-saving work that these vlogs do.”[39] In gorillashrimp's and itsGOTtobegroovy’s videos, the opposite becomes clear: trans vlogs are pivotal for trans futures, for trans survival, precisely for establishing queer temporalities of uncertain futurities. The temporalities of transitions with testosterone prove to be not only complexly folded like Carter suggests, but queer, insofar as in trans vlogs the affirmation of a gendered becoming is possible that now and then goes along mixed feelings, uncertainties, and doubts. The trans vlogs document that the process of a transition, and therefore gender, does not have to prove itself to be unambiguous and stable, or striving after a seemingly predestined future, to be potentially livable.

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39 L. Horak: Trans on YouTube, p. 581.

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Future Bodies in Vaccine Trial Science Practice

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Abstract: This article will focus on temporality in how contemporary biomedical vaccine trial science imagines the human body and the immune system. It presents sociological interpretations on medical research from an ethnographic study where a pharmaceutical trial testing a diarrhea vaccine was followed for two years. The trial offers an opportunity to discuss various ways in which medical researchers view and enact their objects of research, human corporeality and relationality with bacteria, both as lived everyday experience during trials – in this case in Western Africa and Northern Europe - and during the processes of designing, carrying out and explaining the trials to diverse audiences. We suggest that the focus on time and futurity in a trial brings to the fore different conceptualizations of the human body. This has to do with indeterminacy in knowing the body as an object in the immediate present. We will argue that open-ended orientations into futurity enables the vaccine trial to hold together its diverse ontological and epistemic assumptions about the body.

Introduction

This article will discuss how the human body, the immune system, and the contours of the body, are imagined and enacted in a contemporary biomedical vaccine trial. It presents results from a three-year qualitative study in which we, a group of four social scientists[1], followed a pharmaceutical trial testing a diarrhea vaccine in a coastal village in Benin, Western Africa. We will here discuss the various ways in which we interpret the researchers and doctors to view and enact the objects of their research, human corporeality, and the immune system in particular. The body here refers to both lived everyday experiences during the project in Western Africa and Northern Europe, and the bodies emerging in the design, conduct and communication of science to diverse audiences. Drawing on feminist science and technology studies, we make no steep separation between 'scientific knowledge' and everyday experience: both design, implementation, and a researcher's expressions of their own bodily experiences and decisions, inform the ways in which ideas about the body are imagined and enacted in medical trials.

While ideas about the body in medicine have been widely discussed following the publication of Michel Foucault's The Birth of the Clinic (1963), – if not since Aristoteles' analysis of Hippocratic medicine – the theme of temporality has been less central. Foucault, for example, addressed

temporality in terms of "eras", but not experience or orientation within an era. We ask, can orientation in past, present, or future be identified in how medicine, and medical research, sees corporeality? What do such orientations do? For example, does a specific fictioning (Gunkel, Hameed and O'Sullivan 2017, 13) of the human corporeality involve a future oriented open-endedness, or is time stopped in the now of a specific "agential cut" (Barad 2007, 176), that is, a measurement? This article is situated in the tradition of feminist science and technology studies that refuses "the division of labor between science 'doing' nature and humanities 'doing' culture" (Åsberg 2021, 858), and it focuses specifically on temporality.

In this paper we suggest that a focus on time orientations and futurity is helpful when thinking about ambivalences in the conceptualizations of the human body, especially regarding the current interest in human-microbial entanglements (see Helmreich 2009, Hird 2009, Hinchcliff 2016, Roy 2018, Kirksey 2019, Lorimer 2020, Brives, Sariola & Rest 2021). Futurity here has to do with ontological indeterminacy (Barad 2007, 2003; Irni 2013) and knowing the body as an object, now and beyond. We will argue that orientation towards "the condition of an open future", (Barad 2003, 826) enables the biomedical trial to hold together its diverse ontological and epistemic notions of the body.

With this investigation on futurity in the now, we wish to join the social science discussion that argues that there is not one body in biomedicine, but vast differences in practice and theory depending on the field of specialization, the level of expertise, whether we study theory or practice, and where and when (Berg and Mol 1998, Mol 2002, Oinas 2019). The generalized notion of "Western medicine" is a bundle of diversities within what is too easily regarded as a homogeneous entity. It is therefore important to chart in detail the different ways the body is imagined and done in specific fields and practices of medicine. Annamarie Mol's important Body Multiple (2002, 152) suggests a shift from studying how sciences represent to asking how they intervene and enact their objects. In this paper we are interested in both, imagery and enactments, and consider them as closely intertwined. Biomedicine is one of the most influential discourses against which lay people build their own ideas of what a body is, and how it should be lived (e.g. Haraway 1991, 203-204). Biomedicine has authority and legitimacy to act upon the individual and population body (Riska 2010).

In The Woman in the Body, Emily Martin (1987) asked how culture influences contemporary biomedicine, and vice versa, and finds that the authority of biomedicine is closely linked to gender and, importantly, class. Further, she shows how the metaphors biomedical textbooks use are heavily inspired by their period and societal context. For example, in the

United States, images of capitalist industrial production were used to illustrate bodily processes in the post-World War II era (Martin 1987, 38), and images of the cold war crept into depictions of immunity in the 1980s (Martin 1990). Donna Haraway similarly detects cold war imagery in her 1990s work, but, interestingly, finds the ecological "holobiont" an apt metaphor for contemporary embodied entanglements (Haraway 1991, 205; 2016). Today, such questions are posed less in the form of influence from "culture" to "science" – suggesting unhelpful causality (Bennett 2004, 63) – but we still need to inquire how ideas and practices, whether lay or expert, lived or scholarly, shape one another and are intertwined and enacted in diverse ways (Mol 2002).

In debating whether to regard the body as performative (Butler 1993, 4), enacted (Mol 2003; Mol in Martin et al. 2018, 297), or as a "material-semiotic generative node" (Haraway 1991, 208), or a "holobiont" (Haraway 2016), further specification is required: we need to ask not only how, but also where and when, and with which temporal orientation, the body materializes (Butler 1993, 34; Ahmed 2004, 29). In this study, temporal orientations are detected in ethnographic moments. An instance of temporal orientation where the body is imagined in specific ways would be, for example, when the laboratorians with their equipment decide that they have found an e-coli growth on a stool droplet grown overnight in a petri dish, and therefore cultivate it further and send it with its control samples for further analysis. As social scientists, however, we would also view the choosing and eating of a certain meal during a day in the laboratory as a meaningful ethnographic moment where the contours of the body are negotiated. We will here focus on moments when real, lived experiences of the body, and discourses around it, refer to wildly different enactments of the body. They are, we claim, all real (cf. Barad 2007). Our observations include situations in the laboratory when the staff prepare stool samples and discuss lunch plans, all the while considering one colleague's worsening nausea.

In this article we wish to stay a while with observations that in our data first seemed like irritating inconsistencies: how can the contours of the body be so clear in one version of the body, and all gone in the next moment? As social scientists we struggled to notice the many ways in which knowledge in practice is not stabilized. The main argument of this paper is that the imagined and enacted bodies in vaccine trial science are never stable, but their effortless co-existence is held together by knowing the body as indeterminate and future oriented. Through diverse practices and daily incidences, the body is diffracted to many potential possibilities – it multiplies, and it is different things in different moments. We will

conclude that what holds these enactments together is futurity and a temporary investment in a selected method of investigation.

The enactments we found in our study are the following: the numerical body is imagined as numbers, produced through counting, computing, and estimating of the trial data, but also through everyday craft and tinkering, as we show here. The holobiont body is the imagined body of vaccine induced immune response where the contours of an entity no longer are definite, but a self is dispersed to an entangled co-existence with other "critters" like bacteria (Haraway 2016) - even if inactivated. Yet, we also found the individual entity-body, the borders of which must be carefully guarded. Further the contingent, vulnerable individuality of the body needs to be noted.

Furthermore, temporality also figures here in the way in which this study made us more aware of how different ideas about the body are usually historicized in social science practice within a certain period, reflecting a linear understanding of time in mainstream social sciences. In our examples, different 'agential cuts' (Barad 2007) lead to diverse diffractions in the now, presenting seemingly paradoxical accounts of the body. In the data, temporality is not always explicitly discussed, but we argue in the upcoming analysis that the differences are held together by both, openness, or indeterminacy, which we read as a future orientation, and by the inevitable 'haunting' of the past (Ahmed 2004, Barad 2007). Precisely in its openness, this future orientation is significantly different from narratives of inevitable progression and improvement, and it also resists the idea of clear 'turns', or linear shifts in how the body is understood in medicine.

The future orientation that we found in the data is based on ideas of linear progression aided by science and technological improvement – techno-optimism of a kind. On its webpages, the biotechnology company articulates commitment to giving a better and longer life for people all around the world, and biomedical innovations such as vaccines are suggested as a means to achieve the promise. While vaccines have become generally accepted as one of the greatest health innovations in history (e.g. Blume 2005), the problems that follow the material twining in capitalist logics of profit-seeking has gained broader attention especially during the COVID-19 pandemic and the early critique of the global injustice in access to vaccines (Sariola 2021). In this vaccine trial case, a biomedical innovation, capital accumulation, and 'health for all' - be it children in low- and middle-income countries, tourists or militaries – form a seemingly inevitable entanglement. We suggest that while this kind of capitalist techno-optimistic health futurity is perhaps the most visible temporality (and has resemblance with what has been termed the coloniality of

innovation economy; Tarvainen 2022, Maury 2023), it is not the only or a totalizing one. A focus on the body has helped us to notice how different kinds of futurities and temporalities emerge through different forms and ideas of embodiment. Therefore, in addition to the above discussed theorizations of the body, our analysis is inspired by queer theorizations of temporality (Muñoz 2009, Freeman 2007, see also Oikkonen 2021). While critical analysis of destructive capitalist modes of production and accumulation, and homogenizing medicine are needed, this approach allows to pay attention to different, and potentially more hopeful futurities also within Western medicine and its commercialized applications.

Data and method

The data presented here are snippets of encounters during a phase-2b vaccine trial that was conducted from 2017 to 2019. This trial, like all trials, was both standardized and unique. It tested an oral vaccine intended to prevent both travelers' diarrhea in (probably mainly high-income) tourists as well as in military forces, and infant diarrhea in so-called low- and middle-income countries. The vaccine consists of inactivated bacteria and an adjuvant that increases the immune response. The phase 2b trial is only a small part of the entire process in vaccine development, and here mainly the safety and immune response were examined, while also tentative information about the efficacy was gained. An additional benefit for the scientists was the opportunity to generate data that will improve the understanding of how human bodies deal with bacteria, for example data about anti-microbial resistance. The long-term goal of developing a vaccine for children in low- and middle-income countries was also highlighted when communicating with participants and popular media (Huttunen & Oinas 2023).

The trial population consisted of almost 800 adults from Finland who were required to travel to Benin. In batches of 7-35 tourists at a time, they spent two weeks in the here anonymized Beninese coastal village [1], giving blood and stool samples before, during and after the trip, and recording their health and bodily activity in a daily chart. A small research center with some laboratory equipment worked on-site with stool samples of the tourists over the course of nearly 21 months. We, the social scientists, followed the science-in-the-making by spending time observing, interviewing, and filling out questionnaires with the tourists, scientists, laboratory staff, tour guides, hotel staff, and villagers, in chunks of varying time periods throughout the duration of the trial. Altogether, we spent 8 months at the trial site in Benin. In addition, interviews, phone

discussions and lunches where the trial, and other aspects of the doctor-scientists´ work were discussed, took place in Finland, even after the empirical phase had ended.

A few limitations need to be mentioned: by the time we began our data collection, the trial protocol was already designed. Furthermore, we were allowed to observe neither the phases following the sample collection, when stool sample results were processed into data, nor the phase when the data that had been generated was processed, organized, interpreted, and finally presented to wider audiences and funders as a part of the evidence base for a marketing authorization application of the product. We believe, however, that the lengthy period of observation allowed us to sketch some of the contours of the body multiple and indeterminate in the everyday practice of data collection during a randomized controlled trial (RCT).

This paper focuses on the encounters and conversations with the medical team during these years, rather than the tourist-participants who will appear in other publications (e.g., Huttunen et al 2021; Huttunen 2023). The approach of the sociological study is ethnographic. All names are pseudonymized. The entire data set comprises more than 500 pages of field notes of the months of participant observation in Benin and back home, 195 qualitative interviews with staff, people living in the village, and tourist-participants, and with the latter, a two-part survey with 542 and 493 replies. We have documented both information lectures and passing chatter in meetings, buses, toilet queues and restaurants, and conducted lengthy and focused interviews. Often the beachside conversations proved to be as informative as the well-rehearsed lectures with the tourists and media. Here only a few of the jumpy conversations with experts and staff members in the laboratory and the pharmaceutical company meetings will be highlighted.

The researchers were extremely mindful of research ethics in general, and they facilitated and supported the sociological study. They were both informed about, and willing to be, characters in our study. However, ethical issues like informed consent are complicated by medical scholars not being trained in sociological qualitative methods. The onto-epistemic divide in what is regarded good scholarship in our traditions inevitably creates miscomprehension. For example, some of the scientists stated that ethnographic observations and interpretations cannot qualify as scientific data. Thus, while it was extremely helpful to have serious conversations and to co-edit manuscripts to avoid obvious mistakes, and holding respectful curiosity as our key guide, the goal in our feminist science and technology studies project is not consensus or agreement. Ethical processes were extremely important to all of us, but full mutual

understanding between us and the scientists turned out not to be possible, and the interpretations here are ours.

While nothing that is traditionally regarded as intimately personal is highlighted here, it is obvious to anyone who knows enthusiastic scientists that work is intimately personal. The moments we will discuss, thus, are examples where the varying aspects of engagement with knowing the body became apparent for us – for the scientists some of these incidents are irrelevant, as they regard the parameters of the protocol as a definite dividing line for what is "data". The analytical method here focuses on moments that we felt were rather typical and re-occurring during the data collection. We reflect on our own multiple interpretations and focus mainly on indeterminacy, paradoxes, discontinuities and breaks in logic, to valorise the differences.

Analysis

The body in numbers: achievement through a protocol and networked, creative craft

The most dominant enactment of the body in any vaccine trial is the way the trial deconstructs the body into numerical data and then re-assembles it to derive a statistical average that can prove the efficacy of the vaccine. The standardized procedure is extremely complex and involves the orchestrated labour of hundreds of people (Merz 2021). This trial is no different, but the extent of the effort, and especially the creativity and craft it required from all, remained an aspect that seemed to surprise everyone. The body depicted in reliable numbers is the recognised, "self-evident" outcome of the trial, and a massively laborious accomplishment.

For us, the first field work encounters were meetings in Finland before the trial started, often with the pharmaceutical company leaders who flew in for quick daytrips or were met on-line. The tone in these business meetings was always busy, serious, organised, but also excited and only slightly worried – will there be enough volunteers who sign up for the trip? Will the lab building be ready in time? Will buses and petri dishes pass customs? The amount of details that needed to be taken care of was dazzling, from hotel billing and logistics to concerns over US investors and collaborators. The massive effort of the double-blind randomised controlled trial with a recruitment goal of 800 participants, generating tens of thousands of stool and blood samples that are then flown across continents, is an assemblage (Latour 2005) par excellence, with

entanglements, diffractions, and unexpected risks that are hard to foresee and anticipate.

Randomised clinical trial methodology is seen to be the epitome of 20th century biomedicine in its search for universalizable reliability. Towards the end of the 19th century a need to develop methodologies that would prove the efficacy and safety of pharmaceuticals emerged in the face of the massive popularity of bogus treatments and mushrooming production of small-scale potions, lotions, and pills in the context of growing markets within a modernizing US (Sariola & Simpson 2019). The first published randomized controlled trial (RCT), in which participants were randomly divided into two (or more) groups each of which would receive different treatments, took place in the post-world-war II UK, even though the method had been shaping for longer. (Meldrum 2000; Bhatt 2010). This method was devised as a means to avoid bias and disproportional accumulation of particular background variables; randomization addressed the question of human differences (Epstein 2007, 48-50). The exploitative colonial pasts and enduring racializing presents of clinical trials (Crane 2013; Fisher 2020) cannot be dismissed when thinking about how the historical development of the methodology might inform current enactments of the body. Double-blind RCTs have since become regarded as the gold standard of pharmaceutical science, but they have also been highly contested (Wahlberg & McGoey 2007, Cartwright 2007, Will 2016; Rosemann 2019). The method is viewed as costly, slow and sometimes unconvincing, yet inevitable until a better method for efficacy and bioethics can be agreed upon (Petryna 2009; 2010, 59, Devanesan 2020). Social scientists studying RCTs from different perspectives conclude that answers to the questions of 'Does a drug work?' and 'Is it safe?' are highly complex and rarely definitive (Wahlberg & McGoye 2007; Moreira and Will 2016). RCTs are seen to generate sufficiently reliable knowledge about the body, treatment and disease under specific conditions that must be communicated clearly and transparently (Devanesan 2020).

In social science parlance in the practice of the trial the numbers and probabilities are constituted by thousands of entanglements where individual bodies are deconstructed. The trial attempts to position them specifically and transparently, yet inevitably, as living beings, they are ultimately uncontrollable. The body in numbers is thus a non-specific body. Furthermore, the individual body that participates in a trial is both the lived body of the individual in the trial site, and a constantly transforming one, a body that was entangled in an environment in the restaurants, bathrooms and aircrafts brought into the picture by trial participation. The pathways that make up these entanglements are known to an extent, and the task of the trial staff is to try to chart them in a way that makes

the trial procedure reliable according to the standards set by medical and pharmaceutical sciences, industries, and regulators. The staff also advised participants on how to protect their health, first as pre-travel advise and later as guidance in the 3-hour welcome session.

Our ethnography, regarding the details in the design of this RCT thus started far too late as the important, laborious negotiation around the protocol details would have been fascinating to observe. The simultaneously serious, excited, and optimistic spirit of the stage when we came on board is captured in one of the many early-summer meetings in Finland a month before the first trial participants were scheduled to depart. This meeting was focused on good clinical practice (GCP) and led by a consultant from the company that is recruited as the required external monitoring support. Monitoring assists the trial on a practical level to ensure compliance with the criteria established by the national pharmaceutical research regulator. It is her responsibility to check that every practical detail meets the protocol criteria. In the white, ultra-neutral meeting room of a private clinic sat the PI of the project, the monitor mentioned above, a cheerful and lively persons contradicting the formal seriousness with her energy the two trial coordinators who were stationed in Finland during the entire process; the laboratory staff; and the nurses who were recruited to meet the participants before the trip, inform them about the study, administer the vaccine, and collect the first stool samples.

Thus, most of the staff present were non-scientists, and were not to travel to Benin. Much of the actual labour of collecting samples before and after the trip was conducted by a diverse set of professionals in Finland. The meetings in the first months made it clear that while the trial was seen to happen in Benin, a lot went on in networks of craft internationally (Meskus 2018). The meeting tried to unveil, foresee and control, the many potential problems were to be anticipated and avoided in the multiplicity of entanglements of a trial.

The meeting with the monitor made clear that even as a trial follows a script and a guideline, it is always unique on the practical level. Even when everything goes well, actions related to details are constantly improvised and mini-crises creatively avoided. Sometimes events could not be foreseen, like when a connecting flight was cancelled, but the team found solutions to stick to the timing in the protocol. The daily work of the biomedical laboratory scientists (BLS) and the research nurses, too, involved innovative and creative orchestration. For example, the "mixers", the technicians who prepare the vaccine and placebo cups, proudly told the monitor that they noticed that any lab staff member who is an outsider to the trial might, in theory, guess who will receive a placebo by the absence of a walk to a fridge where the mix of the actual vaccine

compound was stored. Thus, they invented a routine of slamming the fridge door whether or not they had needed to open it, in order to confuse a potentially curious co-worker. This shows not only the commitment of the staff on all levels, but also the trial as a craft conducted by innovative human individuals. The mixers were cheered for their resourceful ideation.

Especially in the beginning of this exceptionally demanding trial, creative daily human activity was at the centre. While pharmaceutical research has a strict hierarchy, and the PI is responsible, appreciation of the skills and commitment of all staff is crucial for the trial to meet the regulators' demands. This was also apparent in the information sessions for the tourists. The participants' role in the success of the trial was underlined not least by explaining the logic of the vaccine to them in lay terms, with care.

An example of social creativity from the later data gathered in Benin is from the first information session for newly arrived participants. The team had come up with an efficient way to inform participants about how to identify the fluidity of a proper diarrhea sample to be recorded in health cards: "if it is loose enough to be drunk as if a milkshake with a straw, it qualifies as the right diarrhea". The milkshake metaphor elicited many a laugh and easily stayed in mind. This helped the participants to tick the right boxes. The identification of right type of stool was otherwise not easy, especially when ill yet trying to fill in a card with many details. The milkshake reference became a permanent way to instruct the participants throughout the study.

This everyday creativity, passion and reliability across roles and academic hierarchies was also shown during the monitor meeting in the appearance of the BLS who was about to open the trial laboratory in Ville. The responsible BLS, who was thoroughly trained and experienced in clinical microbiology and stool analysis, yet with no education or prior experience in the conduct of an entire medical research project herself, stayed in the village for the duration of the trial, and from the outset she laughingly presented herself as the Queen of Shit. She would oversee and steer a lot of the daily conduct in the Ville laboratory. The BLS labour was crucial for the trial, and for the process of achieving the reliable numerical body.

The everyday craft of the trial exhibited a sincere commitment to the end goal of reliable evidence about the safety and efficacy of the vaccine. Sociologically it is interesting, even if unsurprising, that scientific validity and reliability really appeared to be a matter of mundane, daily social conduct. Whereas for RCT scientists protocol violation is a clear matter of reporting, for social scientists adherence to methodological guidelines

always include innovation. In practice this was laborious, both in Finland, where each participant visited the clinic three times, but even more so during the two-week holiday: two formal information sessions, two one-on-one consultations with each participant, and the checking of the participants' completed health cards in which they reported bodily functions in detail, from headaches to meals and bowel activity. This meant, at times, phone calls to drunk or sick tourists whose cards were missing or messy and taking the extra trouble to collect the required information and samples from participants. Most tourists were compliant and eager, but on every trip, there were individuals the coordinators needed to babysit, or support through hardships. The hardships were numerous, as half of the participants got ill with diarrhoea, even if often mildly so, but other illnesses also occurred.

We witnessed numerous serious and humorous conversations about potential problems. Avoiding errors regarding trial was at the centre of the work of the staff and came right after the goal of keeping everyone alive, as one staff jokingly put it in the information session upon arrival. It was possible to achieve a clean record. The constant human tinkering in the troublesome situations was intended not to obscure errors, but to maintain the methodological reliability of the study. What is sociologically interesting is that while the body in numbers demands a huge amount of everyday craft and faith in its relevance, the science does not exclude other ways of imagining the body too. The execution of a method in a particular situation is needed to momentarily stabilize knowledge for specific uses. The trial result too, then, is an "agential cut" (Barad 2007, Irni 2013) needed for the pharmaceutical development, and it does create reliable outcomes for such needs.

While science as craft is a claim with long history (Meskus 2018) for us as social scientists the universality-particularity indeterminacy in biomedical views on the onto-epistemology of the body is harder to grasp. In this trial the environmental aspect of human health was acknowledged. The adult population the vaccine was tested on is from a (rather hygiene-obsessed) country in Northern Europe, Finland. The participants were required to be still "naive" to a tropical microbiome and to medical interventions too similar to this vaccine. Other differences such as gender and age appeared as variables where diversity was desired.

The results are derived from thousands of samples that were compared to information collected in health cards indicating average exposure and symptoms, and later, after careful coding and de-coding, to whether a placebo or vaccine was taken. According to Stephen Epstein (2007) the RCT holds a promise that a universalized mass body can prove efficacy, thus in practice, the RCT must also constantly observe population

characteristics and monitor diversity and population bias. The trial we studied tried to find a reliable age distribution among adults, and the vaccine will be separately tested on children in chosen African countries, thus assuming that there is no one universal human anatomy that is not shaped by its environment and age. This is nothing new or surprising in clinical science, yet questions regarding to whom results are considered to be generalizable, and on what basis, are still important. The category of 'traveler' is a rather vague one, and so is that of 'Western traveler', which was sometimes used to refer to the beneficiaries of the potential vaccine. The question is especially intriguing in this case, as the Finnish population of has been branded as genetically homogeneous and unique, and the marketing of national health data for research is seen to require careful balancing between this uniqueness and international relevance, as Aaro Tupasela has suggested (Tupasela 2021; for other contexts see also Crane 2010; Merz 2021).

As the purpose of this trial phase is not yet to produce final generalizable knowledge about the efficacy of the vaccine, the potential 'uniqueness' of the national body is only a temporary question and does not pose a problem for the reliability of the trial. This, however, allows us to ask what kind of assumptions about sameness and difference are at work even if the study recognizes the significance of environment for human immune system. As is typical in clinical trials, the availability and convenience of research subjects may be a key factor for determining on whom a particular vaccine or medicine will be tested (e.g. Epstein 2007; Petryna 2009).

Our findings question the enduring observation that medicine operates with sameness (Epstein 2007; Merz 2021), imagining one universal body, where any differentiation around social life is rendered irrelevant – geographical space, environment, gender, and even age is often seen to have no place in the biomedical anatomical ideal. For example, Margaret Lock and Vinh-Kim Nguyen argue that the dominant orientation in biomedicine is that the human body, despite its outward differences, is essentially the same everywhere (Lock & Nguyen 2010, 1). Yet the practice of phasing trials, the challenging work of sustaining a diverse trial population in terms of age and having the (microbial) environment as a starting point, indicates appreciation of diversity if not intersectionality. Overall, the large population required for the RCT produces a universal body through computation, meaning it does take sameness as its end point: the aim of the method is to make sure that differences that do not matter do not get on the way (Epstein 2007). This sameness is, however, highly differentiated in the lived body by its context and individuality. The trial assumes variety in how each individual body works, but the number of

participants generalizes individuality to a probability of the vaccine working well enough for certain kinds of people. The body can be generated into universality by counting until difference can be overlooked, but it does not make individuality disappear epistemologically.

The ecological, symbiotic holobiont alongside human exceptionalism

In the next scene a sociologist and a scientist sit comfortably in the hotel lounge chairs in Benin, sipping pre-dinner drinks after a long day of work at the trial laboratory. The scientist, never too tired, explains vividly how the vaccine works in an individual body. The story is not about the body of large numbers of the trial population, but a body emerging in an intricate interplay of entangled elements. The depiction reminds us of Donna Haraway's holobiont (Haraway 2016). Approached from the perspective of the holobiont, the human body is a seamless participant in the ecosystem where bacterial and genomic flows are inevitable and hard to control by a human. We read the description to suggest that this vaccine does not fight the bacteria but teaches the body to live with them – through an exposure to a modified version of the ETEC bacteria. The body learns to interact with ETEC in the next encounter in such a way that no harm occurs to the body. The vaccine imitates a mild exposure that helps the body to cope better in the abundance of gut-level entanglements found in tropical conditions. One significant element is that this vaccine is administered as an oral liquid, and therefore, the mucosal immune system has a key role in the immune reaction. When ingested, the gut processes the confrontation in a similar way to how it would interact with actual bacteria, but in a safer way for the human. The dynamic learning process within the gut was the key issue.

One important interpretation in social scientific terms is that a less cautious, more ecologically dynamic holobiont life is possible with such vaccines, compared to an every-day where one constantly "micro-protects" against invasive, harmful microbes (Huttunen et al 2021). Another one is that the holobiont body is constantly evolving in its environment. It is not stable but a vital, embedded organism within a larger whole. Importantly, the vaccine is a human-made element, or technology, introduced into the ecology of the gut, and thereby challenges the stark divide drawn between nature and culture/technology. The distinctive human-centeredness is in question here, and a holobiont-cyborg mode of existence prevails (Haraway 1985; 2016). A natural, dynamic bodily learning process is not in opposition to biomedical technologies.

The renowned biologist Lynn Margulis, who introduced the concept of the holobiont in 1991, underlined the importance of multi-species symbiosis for mutual and collective development. Following Margulis, embryologist Scott F Gilbert (2020) suggests that there is a paradigmatic shift from 20th century biology focusing on entities, competition, and stability towards the holobiont view of living-with in unstable but necessary entanglements. The gut is the metaphor and lived reality for human entanglement with an abundance of "critters" (Haraway 2016, 1) we would not survive without (Wilson 2015). The entanglements undo our contours. Corporeal material relationality is temporal, and the embodied (dis)entanglements "queer time" by undoing normative temporal forms such as heterosexual reproduction, suggests McCormack (2021; see also Edelman 2004, Muñoz 2009, Freeman 2007, Shildrick, 2019).

We suggest that the vaccine logic in itself queers what Oikkonen (2021, 22) names "culturally prominent ideas of immunity" that "mobilize normative assumptions of bodily boundaries and encounters between bodies", complicating mainstream ideas about biomedicine as a coherent whole (Dolezal et al. 2021). The ecological-technological holobiont logic of the vaccine also challenges the suggestion that individual immunity automatically "resonates closely with the imaginaries of eugenics and racial hygiene" (Oikkonen 2021, 34), as Oikkonen recently maintained in her study on "post-pandemic futures". Based on our study on this trial, we argue that to condemn the affective appeal of immunity as inherently negative overlooks the possibility that immunity can mean a desire to live with. The immune response means that an organism like bacteria or virus is incapacitated and destroyed in the gut, but does not need to be eliminated in the immediate environment: co-existence is made possible.

The gut is here a vital organ that constantly learns and changes according to its environment: its capacity to adjust, even if temporarily, to new influences is the key to the vaccine – as for vaccines in general. This vaccine is based on inactivated bacteria that train the body to live with them in the environment, in very similar (but less painful and dangerous) ways to how the body learns when living through an illness. The grown-up trial participants are seen to be like enormous, healthy but vulnerable babies when exposed to tropical microbiota. The vaccine alleviates the pain and danger of that encounter by prompting the body to do what healthy bodies do: they learn and become skilled in co-existence and mutual attunement as the immune response is activated (Frost in Tamari 2021, 91; Frost 2020).

In this view, the immune response is not regarded as a form of war, in which the body that encounters 'foreign' antigens, mobilizes an array of biochemical agents to "eliminate the putative threat of otherness"

(Shildrick 2019, 15). Here, rather, immune response is understood as a pre-requisite of co-existence. The idea of such co-existence and acquired immunity generated with a vaccine as "natural" is especially interesting in the light of research on vaccine denialism and hesitancy; one reason to abandon vaccines is said to be a preference for a natural, and therefore assumedly healthier immunity and immune system, developed through encounters with actual pathogens (Nurmi 2021). The notion of naturalness is in question; similarly to what Helosvuori (2021) suggests in her research on infertility treatments, technology – here, the vaccine – connects immunity to specific forms of naturalness rather than prevents natural bodily processes. The holobiontic views of the vaccine and the immune system complicate the boundaries of what is seen as 'natural' or 'unnatural' and suggest new forms of 'naturalness' to emerge.

Yet, the scientists also expressed views that go against holobiontic contourlessness. However ecological their approach may be towards the gut, a holobiont view of co-existence was often confronted with a human-centered view and a need to maintain some boundaries. Human medicine harbors a commitment to human exceptionalism and human – -non-human boundary work. The entity that medicine is designed to care for is the human, one of the doctors said when we discussed multi-disciplinary collaborations. In a conversation about the One Health paradigm which recognizes the intertwinement of the health of humans with that of other animals and the environment, one staff member stated that medicine is per definition human-centered, and this is not an ethical dilemma for them, despite many being devoted animal-lovers. In this way the body is not imagined as fully immersed in an ecosystem characterized by total fluidity; rather there is species-specificity, some individuality and entity borders (cf. Pradeu 2019, Gilbert et al 2012).

When discussing pathogenicity, the scientists often underscored that bacterial encounters are not to be feared as such. A healthy body needs microbes, and copes with some pathogens in reasonable amounts. This came up for example when discussing the assumption that the trial could put the participants' health at risk, but also when observing staff members' personal eating behaviors, which varied a lot. Many a chat had an element of minor "war and border controlling" (see Huttunen et al 2021), recalling the metaphor of the human body as a well-functioning state where some level of border control is assumed to be a necessity (Martin 1990; Haraway 1991). Every bite could be a moment of consideration and discussion, perhaps due to the trial topic's presence, but also because of the foreign food environment. For example, at a buffet table when she considered a leaf of lettuce, one staff member explained that what matters is the amount of bacteria and rejected the salad this time. Another staff

member underscored the importance of pre-exposure health status and prior immunity.

Here co-existence with bacteria is not a life in "natural" harmony (Halberstam 2020, 7), but one seeks to find a relaxed balance between a good life with friendly bacteria, and an awareness of a potentially vulnerable individual body in sometimes a potentially hostile situation where one does not wish to be surprised by a crowd of nasty critters. Later, in her comments for this article, a scientist described her view followingly: "Bacteria are mostly friendly and I make very little effort to avoid them, less than many others. So for me life is not at all fight against bacteria. Then there are those often causing health problems. It is like ice in a lake: great to ski and skate, but stupid to go there when the ice may be too thin to allow you to enjoy it. So no constant struggle but caution when you know that there may be bad consequences".

As in the salad situation, there are many private meal situations where caution rather than a willing ecological merging of oneself to the local natural microbiota comes up. Some did not approve of the choice of a staff member who went so far in the ecological practice that they started to drink tap water, but colleagues did not interfere either, as personal integrity and freedom to make choices were valued. When sitting with the lab staff at lunch, the conversations easily became more private and personal styles of exposure were discussed as a constant balancing between being careless and various every-day practices – how much effort is worth the trouble to limit exposure to pathogens? The body is also a work tool and thus an individual entity one must protect, yet not think about constantly. Frequently someone fell severely ill but was never blamed for carelessness. At the trial site, some also mentioned not having taken antibiotics for a decade, referring to intentional avoidance. For the trial participants, antibiotics were not advised unless the situation was decidedly serious as their use would affect the study participation, but also because general concerns about the spread of resistance intensified by careless use of antibiotics. Many, but not all, staff members expressed a similar way of thinking regarding antibiotics: one should avoid them, if possible, but at times they simply are needed. The trial could actually prove that monitoring by a doctor helps in itself, and unnecessary antibiotic use could be avoided through a doctor's evaluations, for example regular, supportive phone calls checking moods and well-being.

These private and professional behaviors of the trial scientists exhibit some similarity with the imagined 'immunity as warfare' typical for the cold war era (Haraway 1991), alongside the contemporary emphasis on co-existence and holobiome (Lorimer 2020, Mills et al 2020). As explored by the feminist classics on imaginaries and discourses on human immune

systems, Donna Haraway's Simians, Cyborgs, and Women (1991) and Emily Martin's Flexible Bodies (1994), in the context of the US the 1980s' human immune system was depicted as a militarized field of warfare. The human-centered entity-approach in our case moves away from these metaphors drawn from the situation of one hegemonic nation-state during the cold war era, in which it defended itself with threats of deploying a nuclear arsenal. If in this conception the immune system fought bacteria with an explosion of antibiotics, the vaccine trial's nation-state body today defends itself from overwhelming numbers of particular kinds of evident pathogenic outsiders, while still knowing that interaction is inevitable, even desirable.

If the 1980s' cold war influenced the metaphors of the human defense system, reflecting societal tensions of the time, the influence is not entirely over yet, even if the bodily imagery today also accommodates the more subtle analogies of a surveillance war, and the symbiosis of the holobiont. Our analysis focusing on the tourist-participants (Huttunen et al. 2021) points to the ways in which ideas of microbes and immunity are entangled with broader societal and global relations of racialized imaginaries at play when notions of purity, hygiene, dirt, and illness are negotiated (Chigudu 2020). Despite the logic of the vaccine, in private the staff regularly noted that hygiene in the village should be improved, and ways of educating the local people on the matter were pondered. This was a shared discussion topic with the tourist-participants. To our surprise they did not comment on the local adults having better immunity than the Finns, even if regular encounters with various bacteria may strengthen the body eventually. Such an environment is seen as too risky, with a high childhood mortality.

To summarize, by its design, the vaccine trial stages the body in ecological multi-species entanglements. The trial assumes that regardless of human choices, contact is likely, as microbes are among us, in and on us in hitherto unimaginable quantities. Trial staff members mentioned frequently that microbes are crucial for well-being and not essentially pathogenic. Antibiotic warfare against them should be avoided as far as possible. There is an undercurrent of relationality, interaction, and mutualistic outcomes also in the (oral) vaccine logic. In the enactments of the body here, some traces of the discourses of war against microbes emerge, and are complemented by what Haraway comes to view later, in Staying with the Trouble (2016), as the human-microbial co-existence of the holobiont.

This combination of ideas about the body does not seem to bother the medical staff in this trial. It is noteworthy that as Pradeu (2012), for example, argues, within scientific publications in immunology there are vast

differences in how the relationality of self and the microbiota are described. The assumed ontological shift in the contours of the human body being fluid, open-ended, porous, and processual (e.g. Roy 2019) resonates with the imagined body in the design of the vaccine - but it does not exclude the ontology of the clearly demarcated, defensive 'nation-state' body in some of the personal, and professional, practices. The medical researchers managed the body multiple (Mol 2002, 158) in their daily practices and the fictioning of the future body they engage with by shifts in methodology and attention.

These approaches, the ecological holobiome, and the human-centered, individualized warfare conception of immunity, are often described as contradictory or historically consequent to each other. The ecological approach criticizes the assumedly outdated Pasteurian approach that depicted microbes as enemies (Paxson 2008; Paxson and Helmreich 2014; Landecker 2016; see Latour 1993): if beneficial bacteria and other species have co-evolved with humans, and a collective human-microbe existence performs numerous micro-ecological functions which are essential to human development, immune system formation and function, digestion, metabolism, and cognition (Lynch and Pedersen 2016; Van Treuren and Dodd 2020), the hygiene-enthusiastic anti-germ theory of the Pasteurian tradition of the 20th century must be flawed. In a "post-Pasteurian" view this understanding of the microbial ecologies of the human body indicates a paradigm shift whereby the human body is only now understood as inseparable from nature, and now the millions of years of co-evolution between humans and microbes are acknowledged (e.g. Lorimer 2020; Lock 2018). The re-discovery of human bodies' and microbes' deep co-evolvement and inextricably interdependent entanglement is sometimes presented as a novelty and a historical progress (Lock 2018, 467). In our ethnographic study, however, scientists smoothly shifted between the registers without reference to linear chronological progression. Furthermore, futurity here also means that contemporary understandings of bacteria alter their future in the now: Hannah Landecker (2016, 37) suggests that "The effects of presuppositions are material, such that the very thing under study has the human history of explanation and intervention within it".

An underlying commitment to child survival both as a group of people and individuals may explain the limit to the ecological notion of the body here. Pathogens in vast numbers are dangerous even in much of the ecological holobiont thinking, as in some forms of vaccine denialism, if the idea of individual human survival is retained as a value (Nurmi 2021). The quantity and pathogenicity of bacteria, as well as the human-centeredness of the quest for personal and population survival, are, we

suggest here, also orientations in futurity. Immunity as border control and the all-encompassing ecological approach come together in their aspiration to look forward, to be geared towards a possible future, whether to survive as species or be embedded in continuous change.

Deadly mistakes and the vulnerable body

While the aim of the trial is to collect useful and credible data, we frequently witnessed attention and care to an individual's health concerns. In these moments, worry, pain and also grief were not downplayed. Yet, it was also emphasized that as a doctor, the professional must learn from mistakes and be ready to make new ones. For us these reminders were about the scholarly trial body being constantly diffracted into new patterns by medical practice (Barad 2007), and that the scientists are also practitioners of medicine. This practice reminds the scholar of individuality, fragility, vulnerability, and grief in the face of pain or fear of loss of lives, as well as the need to act and proceed into an uncertain, contingent future despite the many failures. When the bus transporting the very last group of trial participants to the airport left the trial site, the principal investigator, to her own surprise, had a strong emotional reaction. According to her, it was the relief that the trial participants had all survived and without any severe accidents; she had considered herself ultimately responsible for the health and safety of the participants. Thus, the body of numbers mentioned in the beginning of this article contains also the individual body, that does not disappear from the view of the scientists.

The topic of care for the individual patient emerged often when discussing particularly intriguing patients in doctors' work in general. Sometimes the comment was that some patients cannot be diagnosed correctly without a face-to-face encounter. Taking a hunch seriously requires the professional competence of an experienced doctor who can suspect an entire range of issues, not only the most obvious. One of the doctor-coordinators of the trial referred to a similar hunch when she had to make a major decision about procedures regarding one trial participant. Her decision to act turned out to be the correct one; in her explanation, a particular kind of feeling based on all her work experience, and her ability to pay careful attention to certain signals, led to her decision.

One interviewee, a doctor-coordinator, described the different logic of a trial compared to the clinical logic of care of the individual's health followingly: in the everyday work of medical practice the point is to "just take care of things" and get health problems fixed, rather than focus on recording everything carefully. As she put it, "I'm used to that - - it's

enough that the throat ache is gone. Then in this case [the trial] it's not at all the point that the sore throat is gone, but that it's properly recorded in all the places. So I kind of had it the wrong way in my head at first". This brings to the fore the "inconsistencies" between what we have called the body in numbers, and the vulnerable individual body that needs to be cared for. The advice for the doctor-coordinators was that the participants' health is the priority, and everything else comes after that, which meant that these different logics needed to be constantly balanced. In her study on the ontologies of a trial, Charlotte Brives suggests that the patient-participants acquire new skills and knowledge and take on new corporeal practices (Brives 2013, 411); in our study, those conducting the scientific work needed to negotiate the different versions of the body.

These stories are reminders to us sociologists that despite most of their time being spent in other duties, patient encounters and skills in conducting them root medical researchers in their roles as doctor-scientists. Similarly, the scientist-doctors in Ville spent a lot of their time consulting the individual participants on how they cope with diarrhea, calling them several times a day when needed. The attention to the individual does not stop them from seeking the mathematic probabilities. The vaccine trial and its various conductors manage the numerical body of the double-blind trial, and the holobiont body – the body that is ecologically open and at times fights to maintain a safe boundary – and the individual, unique body that needs to be seen and spoken with, and who may die in the hands of even a competent doctor.

Discussion

The ethnographic method whereby social scientists follow the same individuals through different situations enables the observation of the body multiple within a research team that is explicitly committed to one idea of the body: the ontology of the trial and its body dispersed and again condensed into numbers. In this article we identified a diverse set of other enactments of the body too: the ecological holobiont body of the vaccine, the nation-state defensive body of the personal everyday practices of the staff, and the individual, vulnerable body of the doctor-patient relationship. All these figured in the same trial, when followed ethnographically. They all are "true" at the time of the event and should be taken seriously. They have further consequences, and they send off novel diffractions in unexpected ways, yet following a pattern that can be detected. Often the pattern is governed by an agreed-upon methodology – albeit one that requires everyday tinkering. The method gives the diffraction its credibility

even if the method itself is a mere construct, a temporary achievement that coheres around a momentary consensus. In this trial, the consensus however alternated with seemingly paradoxical accounts, for example, given in the ten minutes between moving from test tubes to lunch salads, exhibiting parallel, inconsistently organized ideas and practices of corporeality rather than cumulative epistemic progress.

Such concerns seemed not to trouble the scientists of this trial. This, we argue, has to do with future orientations and indeterminacy. The corporeal, inflected, "less elegant" modest witness (Haraway 2007, 24) we encountered, has a convincing case, not despite the many emerging ideas of the body, but because of them. It is also important to consider that the researchers in focus here were not alone, and the trial science was made possible by an assemblage of a large number of people, critters and more-than-human actors, and their creative craft, as well as infrastructures, technologies, and material equipment.

This article discusses two aspects of temporality highlighted here: first, the paradoxes between the different imagined and enacted bodies are possible due to future orientation; second, the holding together of vastly different and conflicting images of the body usually assigned to different eras and historicized to belong to certain decades only, has also to do with non-linear space-time-mattering in everyday scholarly, and lived, corporeal, practice.

Here also lies our contribution to the discussions on queering medicine and the queer temporalities of the body in medicine (Dolezal et al. 2021, McCormack 2021): rather than working at the outset from a sense of a normative alliance between a presumed coherent body of medicine and the individual, independent, bounded neo-liberal, capitalist technology of a heroic patient, a look at the cracks and inconsistencies highlights the multiple diffractive potentialities in science and medical practices. The challenge remains, of course, to insist on the importance of a critical analysis of the ways in which normative power operates while new futurities emerge. Our analysis of the diarrhea vaccine trial honors the tradition of queer studies, where the double task of looking for life-affirming disruptions in diffractions and a critical analysis of the potential force of medicine as an institution of social control is not a binary either-or but a both-and (Clarke et al. 2010, Bennett 2004, Shildrick 2019).

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The Qur'ānic Ghilmān: Shifting Gendered Boundaries of Sexuality

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English abstract: The article argues that there is a discursive space within juridical texts and Qur'ānic commentaries that justifies the postulation of a third gender or gender ambiguity. It examines the legal treatment of alternative gender identities by analyzing the personal appearance of the ghilmān. Descriptions of the ghilmān focus on glorifying their personal appearance but rarely discuss the ghilmān's characteristics. They support the assumption that ghilmān had another hidden and unspoken role serving as sexual partners for male believers. The phenomenon of the ghilmān widens the division between the earthly world and heaven as the Qur'ānic spectrum of heavenly gender and sexuality expands known gendered boundaries.

I. Introduction

Personal appearance reflects social characteristics of religion, culture, fashion, gender, and socioeconomic status. Personal appearance reflects a desired or undesirable reality and reveals differentiation. It is important in determining society's roles and expectations, concealed or revealed messages, and linking ethical and aesthetical perfection (Rustomji, 2009, pp. 40–62). In Islam, conceptions of personal appearance are perceived as part of becoming a better believer by cultivating oneself as one of God's creations, a manifestation of the symbiosis between morals and aesthetic traditions. Ethics are values that guide people as to the goodness or badness of their actions, while aesthetics are values that guide assessments of beauty or ugliness. Aesthetics includes physical and mental differences which do not necessarily embrace harmony as a standard of beauty (Siebers, 2010, p. 17).

Islam comprehensively interweaves ethics and aesthetics in a way in which each influences the other in jointly promoting ethical values and aesthetic judgments (Chittick, 2014, 3–17; Sandıkçı and Güliz, 2005, 75–77). For example, the Prophet Muḥammad's personal appearance combined both aesthetical and ethical aspects in his praise of God, His creation and the role of His messenger. Another example of this combination can be seen in the frightening descriptions of the evil spirits in hell as clumsy and unaesthetic monsters (al-Qādī, 2001, p. 45); these descriptions seek to urge believers to choose the right path toward heavenly reward. The outcome of this interweaving of ethical

values and aesthetical judgments are legal directives with ethical significance and visual representations that foster in Muslims' personal appearance.

The Islamic afterlife is described as if it were a physical world, mirroring the best of earthly life in a way that relates the two worlds, with that afterlife becoming a space in which humans are transformed into purified versions of themselves (Rustomji, 2010, pp. 167–9). The Qur'ān portrays the wonders of the next life through ideal descriptions of place, objects, and feelings (Q 3:15, Q 5:119, Q 13: 23–24). It is a sensual and intimate world of pleasures evoked in concrete, worldly terms of food and drink (Q 2:25, Q 41:31–32, Q 69:24, Q 47:75). Over time, heaven has become filled with rewards, a proof that even afterworlds have a chronology of material culture and spiritual significance (Rustomji, 2008, p. 296).

Muslim eschatology, the foundations of which are in the Qur'ān, is didactic in character in motivating believers and vindicating God's justice and mercy (Taylor, 1968, p. 66). In this regard, many Qur'ānic verses indicate how those in heaven will wear silk and green clothing, pearls, and gold and silver jewelry (e.g., Q 31:18, Q 35:33, Q 44:53, Q 76:21, Q 22: 23) as a reward, illustrating the relationship between ethics and aesthetics. Most of these verses belong to the Meccan period, when the Prophet Muḥammad preached to the mushrikūn (polytheists) guiding them toward the right path and ultimate heavenly rewards (see also al- Ghazālī, 1981, p. 527; Ibn Ḥazm, 1969, p. 12; Ibn Qayyim al-Jawzīyya, 1982, p. 196; al-Qādī, 2001, p. 54; Ibn Qayyim al-Jawzīyya, 1997, p. 347; al-Haythamī, 1968, p. 398, p. 410; al-Suyūtī, 1993, p. 65).

The symbolic world of this medieval eschatology is based on earthly human experiences and the values and conceptions that arise from them. In the medieval period, it was also influenced by earlier eschatological descriptions, particularly Persian and Judeo-Christian ones (Rippin, 1996, pp. 126, 134–35; Gardet, p. 448). Later juridical sources discuss in detail the behavior of the dead, their personal appearance, and other earthly aspects. This discussion is based on descriptions familiar to both writers and readers, although they change over time and place (Eklund, 1941, pp. 9–10). The human-gendered architecture of the Qur'ānic heaven, structured for the pleasures of the individual, standardizes personal appearance while retaining a distinguishable hegemonic male body (Reeser, 2010, p. 93). Butler claims that "all genders are a performance, culturally created categories" (2000, p. 203). Here, they reflect the cultural norms of the Arabian Peninsula on the eve of Islam. Jahangir adds that the non-binary gendered nature of Islam manifests itself in many ways, including

personal appearance (Jahangir and Abdullatif, 2018, p. 160). Moreover, passing from this world enables exposure to a diversified non-binary system in heaven, proof that at least in heaven the Qur'ān accepts the existence of diverse sexuality and orientation.[1]

II. Goals and methodology

The ghilmān are unique heavenly creations, young boys of eternal youth. Lane states that they are young males prior to attaining manhood (Lane, 1980, pp. 2286–87). The main research aim in this paper is to describe the evolution of the descriptions of the ghilmān's personal appearance in medieval Qur'ānic commentaries and the jurisprudence on the construction of gender identities and sexual practices in medieval Muslim societies. In addition, it examines the development of the idea of the ghilmān into a third gender, challenging the accepted gendered boundaries. Research has been published on other genders and on homosexuality in Islam, but little has focused on the Qur'ānic ghilmān. Medieval descriptions of their personal appearance are the basic materials used in the paper for analyzing their social, religious, and cultural associations. This article expands on some already discussed aspects of these issues but also challenges certain presentations of them by offering a more complex picture of the ghilmān as a third gender created for men's sexual amusement in heaven. I adopted an interdisciplinary approach for the paper to leverage insights from various academic disciplines in combination. The methodology combines insights from history and Islamic Studies to analyze the historical and cultural context of the personal appearance of ghilmān in the Qur'ān as key to their portrayal as a third gender. The historical aspect of this study relates to its examination of the evolving meanings and interpretations of the ghilmān in medieval Muslim sources. The Islamic Studies concerns center on the role of the juridical texts and Qur'ānic commentaries in endorsing the existence of a third gender identity. This interdisciplinarity allows for a more nuanced understanding of the complex interplay between religion, culture, and society and for a fuller analysis of the concept of ghilmān.

The geological term stratigraphy, the study of rock layering, can be applied to historical texts in relation to the layering of meaning and interpretation (Savant, 2013, p. 17) to describe the evolution of meanings and interpretations through time and to help portray wider contexts (Bauer, 2015, p. 12). Applying this approach by means of metaphor can

1 For more about discourse based on the Qur'ān that does not use natural or unnatural to describe sexualities, see Kugle, 2003, p. 197.

help us analyze and trace the evolution of Qur'ānic descriptions of ghilmān in classic medieval commentaries and eschatological works, showing how they have been adopted, adapted, rejected, replaced, redefined and/or repurposed over time. The traditions in this regard were modified in unexpected ways over time and place and due to external influences, local norms and wishes, and expectations. The ultimate picture formed constitutes a blending that attributes sexual roles to ghilmān.

This article argues that there is a discursive space within juridical texts and Qur'ānic commentaries that justifies the postulation of a third gender and/or gender ambiguity, although it is not easy to attribute the existence of another gender to premodern Muslim legal sources (Alipour, 2017, p. 165). The article aims to offer insights into the legal treatment of alternative gender identities by analyzing the personal appearance of the ghilmān. For convenience and fluidity, the term ghilmān that appears in Q 52: 24 is adopted for the purposes of this discussion, though it should be noted that the concept is also encompassed in the term wildān that appears in Q 56: 17–18 and Q 76: 19. Although Rustomji claims that these servant boys were not sex objects (2008, p. 305), I will argue, by focusing on the descriptions of their personal appearance, that they were created also as another gender variation for men's sexual amusement. Moreover, their descriptions are neither symbolic nor spiritual but physical and their beauty is not the product of spiritual perfection, but illustrates aspects of an ideal form of personal appearance.[2]

Ghilmān are an integral part of heaven and of Muslim eschatology. This article's goal is to demonstrate that the ghilmān are proof that the Qur'ān, its commentaries and eschatological primers provide a space for sexual diversity in medieval Islam (Günther, 2019, p. 309). By deciphering their personal appearance, we will learn about their identities and roles as well as about perceptions of aesthetics, young male beauty, and gender. By analyzing the ghilmān's personal appearance, we will discover more about their other, unspoken, sexual role in a context in which male believers were offered an array of sexual variations in heaven that include earthly wives, ḥūrīs, and ghilmān. By depicting the ghilmān as a sexual object, the Qur'ān appears to authorize sexual diversity, but only in heaven.

2 For more about beauty in Islam see: Abouseif, 1998 and Khuri, 2001. For more about beauty in heaven, see Rustomji, 2017, pp. 295–307.

III. The sources

The sources are presented in a brief, introductory way here for the purposes of analysis of descriptions of the ghilmān's personal appearance.

A. The Qur'ān and commentaries

According to Muslim belief and tradition, the Qur'ān represents God's revelations to the Prophet Muḥammad collected after the Prophet's death. This collection of what was preached through Muḥammad into a book then reshaped as prophecy gave him legitimacy as the recipient of divine revelations. Islam contends that the messages of the Qur'ān are universal, eternal, and not dependent on time or historical circumstances (Watt, 1988, p. 2). However, research has shown the historical basis of the Qur'ān as the socio-religious reality of the seventh century in the Arabian Peninsula. While the Qur'ān's aim is to reshape the life of the inhabitants of the Arabian Peninsula, it is still based on and reflects the seventh-century socio-religious reality there. Moreover, research has shown that the Qur'ān reflects the Prophet Muḥammad's thoughts and ideas that were intended for proselytization to the idolaters of the pre-Islamic Arabian Peninsula (Welch, Paret and Pearson, pp. 401–35).

Traditional Muslim commentary on the Qur'ān attempts to provide explanations and interpretations that foster a better understanding of it as God's words, while research considers them as historical texts. Some of the classical and leading medieval commentators that I have chosen as representative for this article are al-Ṭabarī (d. 923), al-Al-Zamakhsharī (d. 1144), al-Bayḍāwī (d. 1286/1291) and Ibn Kathīr (d. 1373).

B. Jurisprudence

Jurisprudence (fiqh) is a religious and moral system of law consisting of theoretical, substantive, and practical aspects. Islam has developed a complicated ecology of jurisprudence that encompasses all aspects of the believer's life. Ḥadīth collections and medieval legal compendiums were composed in various places in the Muslim East throughout the medieval era as constituent elements of this jurisprudence. Because Muslim life depends on jurisprudence, this body of literature sought to tailor often abstract law to the community's needs and aspirations and to changes and developments. A basic methodological issue with these sources is deciding whether they represent theoretical and hypothetical

discussions or real-life situations and rituals.[3] My preliminary assumption is that these sources synthesize theory and practice in a way that defies any attempt to separate them. This synthesis consolidates moral boundaries, with a defined sphere for interpretations and variations of time and place (Maghen, 2011, pp. 232–34). Moreover, the information that comes from these sources reflects a mixture of aspirations, norms, fashions, foreign influences, and variables of time and place.

C. Eschatological literature

Concepts of eschatology and the hereafter are central to Islam and the history of faith in an afterlife extends from the seventh century to the present in an evolving chronology of conceptuality and interpretation (Günther and Lawson, 2016, pp. 1–28; Rustomji, 2010, pp. 166–75; Kinberg, pp. 12–20). Islamic views on eschatology appear in Qur'ānic commentaries, ḥadīth literature, fiqh and in a genre that was dedicated to it, eschatological literature. Classical Muslim scholars from various schools of theology and juridical backgrounds devoted chapters or even books to eschatological issues (Günther, 2019, pp. 308–9) and we will discuss notable examples of them in this article.

IV. Who are you, the ghilmān?

Heaven as described in the Qur'ān is an eternal, physical abode where believers are rewarded for their earthly good deeds. Several verses are devoted to describing its sensual pleasures in matters such as clothing, food and drink, furniture, and fulfilling sexual desire (Tourage, 2020, p. 55). As well as the ḥūrīs (ḥūr al-ʿayn),[4] male believers are served by young boys of eternal youth. These youths called wildān mukhalladūn (Q 56: 17; Q 76: 19) and ghilmān (Q 52: 24) are unique heavenly creations, part of the rich Qur'ānic scenes of joys waiting for the believers. According to Qur'ānic eschatology, male believers are served in heaven because they do not work, but rather have servants who ensure they have a blissful life. The function of ghilmān is to serve and they represent a nameless, faceless working class. They are living beings, but not human and have not lived on earth and faced heavenly judgment (Rus-

3 For more about Islamic jurisprudence and the challenges it presents for research, see Maghen, 1999, pp. 351–54; Maghen, 2005, pp. 281–83; Rispler, 2007, p. 15; al-Azmeh, 1988, p. 251; Schacht, pp. 886–91.

4 For more on ḥur al-ʿayn, see Rustomji, 2017, pp. 266–77; Wensinck, p. 581; Haddad and Smith, 1975, pp. 47–48; Wadud-Muhsin, 1992, p. 55.

tomji, 2008, p. 91). They function as objects, not beings, but they are not slaves in the conventional sense because they cannot be freed or become believers themselves. There are various accounts as to how many of them there are, ranging from 70 to a few thousand and, according to Ibn Abi Dunyā, each is unique (1997, p. 160). The high estimate of their number is well exemplified in the description of two lines of ghilmān that wait to welcome believers, who are unable to see the ends of the lines because of their length (Ibn Abi Dunyā, 1997, p. 60).

The descriptions of the ghilmān do not clarify why their labor is needed, but some explanations of this have been suggested. Al-Zamakhsharī and al-Ṭabarī, in their exegesis of Q 52: 24, explain that these precious servants promised to male believers are a pointer to the unique qualities of the believers, and their role is demonstrating the believers' prestige and the precious rewards available to them for the faith. For example, these servants' personal appearance is so magnificent, one can only imagine the believers' personal appearance (al-Zamakhsharī, 1987, pp. 411–12; al-Ṭabarī, 1978, pp. 40–41). Al-Zamakhsharī adds that they are the children of earthly believers who did not do any good deeds for which they should be rewarded, nor any sins for which they must be punished or, alternatively, that they are the children of sinners (al-Zamakhsharī, 1987, p. 412). Al-Bayḍāwī states that some claim they are the believers' own or as-yet unborn children (1996, p. 248). Ibn Abi Dunyā claims that they are either Muslim or non-Muslim children (1997, p. 60), while Ibn Kathīr claims that they are servants (1997, pp. 259–60). Ibn Qayyim al-Jawzīyya states that, because there is no birth in heaven, the ghilmān are the Muslims' children who died having committed neither sins nor good deeds. Others claim that they are children of the polytheists whom God made servants to the believers in heaven, or that they are God's special heavenly creations, like ḥūr al-ʿayn, as part of the final reward to believers (Ibn Qayyim al-Jawzīyya, 1997, pp. 465–66).

According to Rustomji, the ghilmān are purified beings in substance and in purpose, objects furnished for believers' pleasure (2019, p. 299). Abdel Haleem asserts that the physical pleasures of paradise have been exaggerated and there is no mention of eating, drinking, or sexual activity, indicating that the material rewards are symbolic (1999, p. 97). Al-Azmeh claims that paradisiacal pleasures are not anomalies and that, therefore, the ghilmān are part of the actual sensual and sexual landscape of paradise, and not allegorical (1995, pp. 215–16). Bin Salama goes further by claiming that the ghilmān al-janna are a third gender between men and women and beyond the binary gender system and an object of desire for men despite the clear prohibition on homosexuality. She adds that the Qur'ānic prohibition on liwāṭ (sodomy) relates to prac-

tices that did not vanish and the ghilmān became permitted only in heaven, analogous to wine consumption being prohibited on earth becoming permitted in heaven (Bin Salama, 2005, pp. 15–17). The focus on the ghilmān's appearance reflects the relationship between personal performance and sexuality and suggests a transcendence of earthly binary-gendered patriarchy. El-Rouayheb states that a minority of scholars of jurisprudence have speculated that there is sex between males in heaven, whether with ghilmān or other believers, based on the argument that sodomy and wine were forbidden only in earthly life (El-Rouayheb, 2005, pp. 128–37).

V. The ghilmān's status and role

It seems that, according to heavenly hierarchy, male believers come first, then their wives, then ḥūr al-ʿayn, and, lastly, the ghilmān (Q 52: 20; Q 44: 54; Q 38: 52; Q 37: 47–49; Q 55: 56, 58, 70, 72, 74; Q 56: 22–23, 35–36). It is not clear whether this is a reflection of the earthly reality or suggestive of the role of the Qur'ān in guiding the believers toward preferred sexual practices. ḥūr al-ʿayn provide companionship and sexual pleasure, while the ghilmān are servants, creatures of the working class. These are some of their major roles:

1. Manifestations of God's power: As al-Bayhaqī states, thousands of servants await the believers and each one of them has a different role. (al-Bayhaqī, 1988, p. 199). In his commentary on Q 76: 19, al-Ṭabarī adds that a thousand youth will run to each one of the believers in heaven to serve him (al-Ṭabarī, 1978, p. 272). Ibn Kathīr says that the ghilmān amass to serve their masters, one will be astonished by their number, their beautiful colors, their clothing, and their jewelry. All these ornate descriptions glorify God and His unlimited power to create and reward His believers with precious, heavenly creations.

2. Private servers: The ghilmān are silent servants of food and wine to the believers and run their households.

3. Welcomers: The ghilmān welcome the believers into heaven and gather around them as children do with intimate friends (al-Andalūsī, 2002, p. 39; Ibn Abi Dunyā, 1997, p. 48).

4. Informants and identifiers: The ghilmān inform ḥūr al-ʿayn of the believers' earthly names (al-ʾAndalūsī, 2002, p. 40; Ibn Abi Dunyā, 1997, p. 48).

5. Intermediary exemplars: The ghilmān are described in ways partly familiar from earth (youthful) and partly unfamiliar (eternal). Their in-

termediary nature emphasizes the division between the earthly and heavenly worlds and help believers understand heaven's benefits.

6. Models of beauty: The ghilmān manifest beauty and ease in their youth and purity and the highest spiritual and aesthetic state (Rustomji, 2008, pp. 90–91).

VI. Do the ghilmān have a sexual shadow role?

The Qur'ān establishes a normative framework for Muslims on questions of gender and sexuality (Vaid, 2017, p. 54). The Qur'ānic heaven is imbued with an erotic atmosphere of creative possibilities for sexual pleasures, but the nature of these rewards is not completely clear. Are they fantasy or reality or is there a dialectic between the two? (Tourage, 2020, p. 64). The Qur'ānic heaven is sensual and sexual and believers are immersed in earthly sensual pleasures as a reward. Bodies in heaven are gendered and sexualized, have desires, and are desired in ways that are not disciplined and controlled by worldly forces. This is part of a methodology to increase the attractiveness of heaven to believers, where every desire of the body and wish of the mind will be fulfilled (Günther, 2020, p. 482). The uniqueness of heavenly pleasures present contrasts with those of the earthly world and serves as an incentive for believers to choose the right path. There is a built-in tension between the earthly and the heavenly, permitted and forbidden, accepted norms and silent desires.

According to Lange, the inhabitants of heaven have a different capacity for pleasure; food and sex, for example, are in endless supply, unlike on earth (2016, p. 151). The sexual imaginary of heaven constitutes a liminal zone more open to interpretations and its margins are defined by constructed social, cultural, bodily, and theological borders. Sexuality in heaven is completely overt but also reflects an earthly patriarchal worldview, since only male believers can engage in sex with their earthly wives, ḥūr al-ʿayn and, probably, the ghilmān.

The discussion of the ḥūrīs' and the ghilmāns' beauty illustrates a class hierarchy of beings that serve male believers' desires (Rustomji, 2008, p. 299). Although there is similarity in the focus of the descriptions on the personal performance of ḥūr al-ʿayn and ghilmān and their ideal beauty, the ḥūrī's sexual role is explained explicitly, while the sexual role of the ghilmān remains unclear and shadowy (al-Suyūtī, 1993, p. 72). The similarity prompts questions as to the ghilmān's sexual role, however. Does the expression of these sexual preferences and fantasies to be expected in the afterworld reflect hidden human desires or are

they a reflection of earthly reality that is expected to be continued in heaven? In other words, if the ghilmān have a sexual role in heaven, does it mean that homosexuality is permitted there, as opposed to in earthly life?[5] Is it possible that more sexual variations are offered for men as part of their heavenly rewards? What are the expectations from the ghilmān and why is their personal appearance so important?

To answer these challenging questions, I will analyze the descriptions of the ghilmān's personal appearance in the medieval sources already mentioned above to shed light on it as a major parameter of their existence. This will suggest a wider spectrum of their services than one might initially image, including sexual ones, and present a sexual spectrum beyond a gendered binary. The ghilmān's personal appearance raises many open questions about their identity. For example, there is no mention as to whether they are Muslims or if they have any personal histories, except that they were created by God to serve male believers. Furthermore, none of their traits are described other than their beautiful and youthful appearance, a fact that strengthens the hypothesis that they had a sexual role uniquely for male believers.

VII. The ghilmān's personal appearance

In examining the role of the ghilmān, it is useful to adopt the lens of "flat" and "round" characters – concepts from the field of literature. Nothing is known about the ghilmān except their personal appearance and that they serve food and drink. As opposed to "round" characters who are complex, multifaceted, and lifelike, in the sources, the ghilmān are discussed as two-dimensional flat characters, without complex emotions, thoughts, motivations, or personalities; not do they undergo any kind of change or development (Forster, 1927, pp. 48–55). They conform to a typecast image of good-looking servants, their external characteristics possibly hinting at their concealed sexual role. The ghilmān represents physical beauty uppermost in the manifestation of standards of beauty and harmony. They are not defined by their personality, morals, or other such characteristics, but by their beauty as based on earthly experience. We can analyze the descriptions of the ghilmān in relation to three main categories: age, adornment with jewelry, and the significant employment of pearls in idiomatic descriptions of them.

5 For more recent examples of research on homosexuality in Islam, see Maḥmūd, 2000; Adang, 2003, pp. 5–31; Rowson, 2003, pp. 45–72; Rusmir, 2003; Ze'evi, 2006; Habib 2010; Kugle, 2012; Ragab, 2015, pp. 428–54; Brown, 2017, pp. 1–44.

A. Age

Human aging is a complex and irreversible process influenced by biological, psychological, social, and spiritual factors (Rather, Khan Khattak, and Yusof, 2019, p. 66). In Islam, as in certain other religions and cultures, the human fear of this last worldly station and its physical and mental consequences are reflected in the admiration of youth. The young and middle-aged may find physical and mental degeneration to be repellent because its visual performance and symbolic representations evoke anxiety for the future. Even in the Qur'ān, the elderly are mentioned far less often than the young (O'Shaughnessy, 2001, 177–95). According to one commentary on Q 9: 4, old age reveals and conceals certain aspects: Al-Zamakhsharī gives the examples of white hair as a revealed aspect and weakness of the bones as a concealed aspect (1987, p. 4).

Qur'ānic descriptions of the elderly also point to mental weakness and fragile emotional states. According to Q 22: 5, memory is lost in old age and some will be left to live on to such an age that they forget all they once knew, a gloomy description of old people invoked in the expression arthal al-ʿumr (feeble old age) (al-Ṭabarī, 1978, pp. 156–57). Another word that is used for such disheartening description is harīm (aged, senile), a return to early childhood characterized by limited understanding (al-Zamakhsharī, 1987, p. 144). Q 16: 70 portrays another description of mental weakness (arthal al-ʿumr) and al-Ṭabarī and al-Zamakhsharī explain that loss of memory resembles the ignorance of childhood and youth (al-Ṭabarī, 1978, p. 187; al-Zamakhsharī, 1987, p. 619).

Knowing what the years will bring, the fear of physical and mental deterioration give rise to aversion towards and rejection of the old body. The old body symbolizes the temporariness of this world, part of the punishment for ancient sin, but the reward for devotion is eternal youth in heaven. Human admiration of youth is also reflected in the descriptions of the ghilmān's eternal youth as central to their character. The immortality of heaven's inhabitants, part of their final reward, is extended to the ghilmān, whose beauty is based on eternal youth. Although aging may manifest itself by graying hair, decaying teeth and senility, the ghilmān are not exposed to any of this (Ibn Qayyim al-Jawzīyya, 1997, pp. 463–64; al-Andalūsī, 2002, p. 26). In his commentary on Q 76: 19, al-Ṭabarī explains that the adjective mukhalladūn to them means that they are young forever and adds that the Arabs used to say of men who grew older but their hair remained black and they did not lose their teeth that they were mukhalladūn, permanently young. Other commentaries on Q 56: 17–18 strengthen the view that the

ghilmān will stay young and fresh forever (al-Bayḍāwī, 1996, p. 286; al-Ṭabarī, 1978, p. 223; al-Zamakhsharī, 1987, pp. 457–60; Ibn Kathīr, 1997, p. 98). According to al-Andalūsī's simile, their youth is like a hidden pearl or one kept bright, clear, and white away from rain and sun (2002, p. 79). Rustomji claims that the commentators focusing on what makes youth beautiful conclude that it is due to their effervescence "which is ephemeral on earth and extended indefinitely and always accessible in the garden" (Rustomji, 2008, p. 301).

B. Adornments with jewelry

In their commentaries on Q 56: 17-18 and Q 76: 19, al-Ṭabarī and others claim that the ghilmān's eternal youth means that they could adorn themselves with earrings and bracelets perceived appropriate for boys but not men (al-Ṭabarī, 1978, p. 223, p. 272; al-Zamakhsharī, 1987, pp. 273–74, pp. 457–60; Ibn Kathīr, 1997, p. 98, pp. 486–90). Ibn Kathīr also states that when ghilmān serve their masters, everyone is astonished at their beautiful clothing and jewelry. The ghilmān's use of adornments emphasizes their youth and beauty because male adults should not be so adorned with jewelry, certainly not with gold and earrings. At the eve of Islam, men wore gold jewelry, but scholars of jurisprudence declared a gender differentiation whereby only women were permitted to adorn themselves with gold jewelry in the earthly world (see al-Nasā'ī, 1988, pp. 165–68, p. 195; al- Bukhārī, 1985, pp. 501–3).

To understand this argument, we turn to the legal discussions of adorning male and female children with jewelry and ear piercing. Parents apparently used to adorn their children with jewelry and scholars of jurisprudence discussed whether to allow such appearance. There are varying opinions on this matter and age and gender are important parameters in deciding on it. According to al-Nawawī (d.1277), some say adorning boys with jewelry is entirely prohibited, while others say it should be allowed until the age of seven, which is called ḥaqq al-tamyīz, the age at which children begin to develop the ability to understand abstract ideas, to judge, and to distinguish between good and evil (Giladi 1995, 822). And still others contend that it is allowed if male children are ṣibyān (boys, youths) without specifying an age limit (1966, p. 44). Proponents of different schools of law agree that there is no religious or other need to pierce boys' ears and that it represents mutilation with no religious or medical justification, though some say the piercing of girls' ears is acceptable (al-Asrūshanī, 1997, p. 146; Ibn al-Jawzī, 1984, p. 15; Ibn Qayyim al-Jawzīyya, 1961, p. 18).

C. The metaphor of pearls

Pearls feature in the Qur'ān as both an adornment for the believers in heaven, part of their material reward, and as a metaphor for describing the ghilmān. In Q 22: 23 and Q 35: 33, we learn that God will abundantly bestow his grace upon the believers by adorning them with pearls, while in Q 52: 24 and Q 76: 19 the ghilmān are described as pearls. Pearls are valued for their beauty, rarity, and economic value in addition to symbolizing purity. (Dietrich, p. 821). To decipher the multiple meanings of pearls in this discussion, I have divided the physical, visible traits of pearls from their metaphorical usage.

With regard to physical traits, pearls are admired for their beauty, symmetry, luster, smoothness, elegance, and cleanness, with their whiteness symbolizing purity and innocence; all of these qualities are also attributed to ghilmān (al-Bayḍāwī, 1996, p. 248, p. 286; Ibn Kathīr, 1997, p. 98, pp. 259–60). All the physical characteristics of pearls that are also used to describe the ghilmān are connected to personal appearance. According to Ibn Qayyim al-Jawzīyya, the effect of scattering pearls issues from their quality and quantity like the groups of ghilmān who constantly scatter to fulfill the believers' needs and wishes. The effect of scattering pearls is no less impressive than gold or silk; it is a much more beautiful sight than pearls collected in one place (Ibn Qayyim al-Jawzīyya, 1997, p. 465; Ibn Abi Dunyā, 1997, p. 160). I argue that another interesting aspect, although it is not mentioned in the sources, is that ghilmān are compared to pearls as created from a living, not vegetal or inanimate object, to emphasize their unique human nature.

From the metaphorical perspective, pearls are rare, fine, well-guarded, admirable, valuable, and everlasting. Because they are delicate, they are formed inside a shell that acts as a defense from potential threats, as are the ghilmān, who are created only in heaven, a protected environment. Like pearls, the ghilmān are highly valued and unique because creating them is a delicate process, a grace from God and a manifestation of His unlimited powers. Some add that a ghilmān's beauty arises from their spiritual purity which is everlasting like pearls.

VIII. Conclusions

The stratigraphical method adopted in this study offers a lens for illuminating the layering of meanings and interpretations in the sources about the ghilmān and the evolution of the ghilmān's personal appearance, and thus implications for their role. Over time, these descriptions have been

adapted, rejected, replaced, or modified according to time, place, foreign influence, wishes and expectations in a way that expanded of the role of the ghilmān. Through a careful analysis of the ghilmān's personal appearance, we have added to the traditional accepted roles another variation related to sexual pleasures offered to men as part of their heavenly rewards. The article has supported the view that ghilmān do not offer believers only food and drink, but also sexual services. In a paradigm borrowed from literature, ghilmān were defined as flat characters, implying that the information about them is limited and their characteristics undeveloped. All the descriptions of ghilmān focus on glorifying their personal appearance in contrast to the lack of discussion that exists as to their characteristics. These descriptions support the view that ghilmān have another, although hidden and largely unspoken role as sexual partners for male believers.

The Qur'ānic taxonomy of heavenly gender and sexuality established an independent conceptual and normative framework that exists only in heaven, as part of the incentive for believers to follow the right path. The case of the ghilmān exemplifies the disparity between the earthly world and heaven because the Qur'ānic heavenly spectrum of gender and sexuality is broader, shifting the known gendered boundaries. The detailed descriptions of the ghilmān, including praise of their physical beauty, is connected to bodily pleasures with more options for sexual practice. There is a connection between personal appearance, gender differentiation, sexual roles and sexual variations. The social, gendered and sexual stratification in heaven starts with male believers, then female believers, ḥūr al-ʿayn, and, at the bottom, the ghilmān that supply services, likely including sex, exclusively to male believers. The conclusion is that unequal pleasures are offered for the believers and that heavenly rewards are gendered. Women, unlike men, are not rewarded sexually with special heavenly creatures for their amusement like the ḥūrīs and the ghilmān. While the sexual role of the ḥūrīs is revealed, the sexual role of ghilmān is concealed and the detailed discussion of their personal appearance establishes their sexual role as another variation offered tor male believers.

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