



## The Bionic Body: Technology, Disability and Posthumanism

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This paper looks at the new field of posthuman disability studies and its potential to provide a theoretical framework for critical theory's engagement with modern technologies. Historically, the human body, as represented and defined on stage and in art, has maintained a strictly defined visual integrity. Anything not shaped as 'human' was typically deemed monstrous (from hybrid mythological creatures to severely disabled 'elephant men'). Simultaneously, the category of 'human' was used to circumscribe the boundaries of belonging and the categories of valuation: some groups, including the disabled, were deemed 'sub-human' and designated to either be disposed of (as the carrier of 'life unworthy of life') or, if possible, to approximate the 'human' body. (Romanska 2019: 92-93). Until very recently, the goal of the prosthetics industry was to create limbs that would serve as visual stand-ins for missing limbs. Similarly, the technological capacities of prosthetic limbs were delineated by human capacities: the disabled were to be given as many 'abilities' as the non-disabled, but no more. However, this perception of what the disabled body can and should do has changed with technological progress: not only do the newest prosthetics often look as 'unhuman' as possible, but their capacities put into question the capacities and limits of the non-disabled body. All of these and other issues that have emerged in recent years at the crossroads of posthumanism, disability, and biomimicry have led to the development of posthuman disability studies, which tries to untangle and reconceptualize the ethical, legal, and philosophical boundaries of human enhancement, species belonging, sentience, life and death, and human rights. The posthuman biomimicry and the prosthetic aspects of digital and AI technologies presuppose a form of disabling of the human body: a body without any connection to some type of machine is an inferior body. In this context, understanding the historical dynamics, critical, philosophical, and ethical debates that have dominated disability studies can provide a framework for how we reconceptualize our posthuman, hybrid future in which our existence with the machines that redefine previous hierarchies is inevitable. Thus, the paper proposes critical posthuman disability studies as a new analytical paradigm for recontextualization and exploration of the new modes of being in the Age of Tech.

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**Figure 1:** 'Bionic Hand and Human Hand Finger Pointing.' Cottonbro Studio. Creative Commons License. Link: <https://www.pexels.com/photo/bionic-hand-and-human-hand-finger-pointing-6153354/>.

The technological progress of the twenty-first century, particularly the growth of the internet (including the internet of things), biotechnology, artificial intelligence (AI), and machine learning (ML) have presented a challenge for critical theory: which theoretical paradigm, whether already developed or new, should be used as an appropriate framework for understanding human relations vis-à-vis our new technological presence and our future? From posthumanism, transhumanism, metahumanism, New Materialism, object-oriented ontology, critical data and code studies, and critical and speculative design, to techno-self studies, cyberfeminism and algorithmic critique, critical theory evolved distinct analytical tools and approaches to modern issues. One of the newly emerging fields of critical theory is posthuman disability studies, an investigative method that focuses on the interdisciplinary intersections of posthumanism and disability studies, including the changing definition of disability in the context of emerging technologies, altered perceptions of the human, and evolving understandings of the notion of body and bodily identity (Goodley, Lawthom & Runswick 2014; Lundblad 2020; Murray 2020).

As of now, the field of posthuman disability studies prioritizes the lived knowledge of disability itself in the world of new tech, examining areas such as biomimicry, biotechnology, neurotechnologies, genetic interventions, and other forms of human enhancement central to the experience of disability. However, by probing the limits of human and machine collaboration, the field of posthuman disability studies can also provide a broader theoretical framework for critical theory, including potential reframing of race, gender, sexuality, and other identity theories. Historically, disability and the process of 'disabling' the other has been intrinsic to the structural methods of social, cultural, economic, and legal 'othering' and stigmatization of subaltern identities, de-normativization of difference, whether based on race, gender, or sexuality.

The act of disabling has been essential to the marginalization of women, for example, often conceptualized (in Schopenhauer, Freud, Weininger, Strindberg, and evolutionary psychology, among other fields) as somehow deficient, inferior to men; thus, a female has been viewed as a disabled version of a male (handicapped by the lack of penis), her very being medicalized and deemed in need of treatment and readjustment. Until 1980 (DSM III), hysteria was a legitimate medical diagnosis for women unwilling to fulfill their prescribed gender roles. Likewise, until 1973, homosexuality was classified as a mental disorder (DSM II) leading to an array of medically sanctioned conversion therapies; non-heteronormative sexuality was viewed as a disability in need of normativization and realignment. Historically, Blackness was also viewed and represented as a form of disability. The original minstrel character of Jim Crow, for example, was disabled and mocked specifically for his limping (Murray 2015). Blackness was defined as inferior because it was somehow disabled, or deficient in comparison to whiteness (whether physically, emotionally, or intellectually) (Bell 2011; Barkley 2021).

The tautologically strategic use of disability as a denigrating device has been crucial for the evolution and management of race, gender, and sexuality in a variety of socio-cultural, economic, and legal contexts. To understand how these categories and identities continue to evolve and are managed in the posthuman world of new tech, we must first understand what role disability plays, and how it is conceptualized at the edges of human-machine encounters. This is where critical posthuman disability studies can become instrumental in charting future paths for critical theory in the age of the Fourth Industrial Revolution (4IR).

The recent advancements in bionic technology have had a significant impact on the representation of the disabled in contemporary media culture, and, in turn, the contemporary representations of the disabled body have affected the changing boundaries of what is and what isn't considered 'human.' Many technological

innovations initially developed to ‘fix’ the disabled body (such as reconstructive surgery, nootropics, or prescription stimulants, for example) have been adopted by non-disabled populations as a way of enhancing the capacities of the non-disabled body (plastic surgery, performance enhancing use of prescription drugs use). The recent experiments with exoskeleton suits, for example, initially developed for the paralyzed are now being adopted to ‘supercharge human workers’ (Carey 2021). The principles behind the bionic limbs (limbs whose function is connected to the human brain and controlled by electric impulses) are implemented in brain scanning technology that ‘reads’ our minds (Reardon 2023). These recent ‘brain hacks,’ in particular, that first evolved as a way to assist the disabled with the management of their world, bring forth a specific set of new ethical challenges as to how we conceptualize and legislate technology that can potentially limit our cognitive liberty in the context of ever-evolving field of neurotechnology (Farahany 2023).

What is and isn’t considered a prosthetic has also changed, from phones and computers that augment our cognitive abilities to AI advances, Google glasses, and wearable health devices that enhance our knowledge of the world and ourselves. Assistive technology often becomes self-improvement tech, and vice-versa, self-improvement tech becomes a form of assistive technology: a hearing aid that allows for direct connection with Apple products,’ for example (Campagna 2022: 18). The disabled are using AI tools in a way that advances both their capacities and the capacities of the AI, creating and exploring the kind of symbiotic relationship between the human and artificial intelligence that can affect how we function with and legislate the future AI technologies (Snow 2019). Artists and technologists are developing prosthetics that add digits and limbs, rather than just replace missing ones (Ratner 2021).



‘Third Thumb Changes The Prosthetics Game.’ Dani Clode: <http://daniclodedesign.com/> Insider. Mar 4, 2018.

As all bodies become in some way enhanced bodies, the definition of what should and shouldn’t be considered a disabled body has been undergoing a subtle shift, and with it, the perceptions of what is and isn’t a ‘human’ body, and even the very need for delineation of such a category. As the German theatre theorist Hans-Thies Lehmann put it: ‘the very distinction between human beings and animals or machines, an essential precondition of humanist ethics and aesthetics, is radically questioned by the logic of technical progress itself’ (2009: 5). People with disabilities are at the forefront of our debate around our increasingly hybridized – man-machine – future, both its fears and

hopes. Their existence on the frontier of ethics and technology grants them particular insights into some of the most fraught questions of the modern era, including the ethical limits of technology in medicine, science, law, and even warfare. (Clapton 2004)

The Oxford English Dictionary defines bionic formally as ‘having artificial body parts, especially electromechanical ones,’ and informally as ‘having ordinary human powers increased by the aid of bionic devices (real or fictional)’ (2021). The word comes from the Greek ‘bio,’ meaning ‘life,’ and the root of the word ‘electronic,’ which derives from the Latin word ‘ēlectricus,’ and from the Ancient Greek ‘ἤλεκτρον’ (ēlektron). The word ‘bionic’ itself was coined in 1958 by Jack Steele, an army medical doctor, who initially conceived it as the science of studying the functions and structures of biological organisms to replicate them in engineering design solutions (1977). That field eventually came to be known as biomimetics. In the 1960s, the word ‘bionic’ entered pop culture to denote superhuman qualities achieved through the merging of the human with the machine. In the contemporary context, bionic denotes a specific combination of robotics, artificial intelligence, and neuroscience that allows two-way electric communication between the human brain and the prosthetics.

Historically, the human body, as represented and defined on stage and in art, has maintained a strictly defined visual integrity. Starting with Greek and Roman mythology’s visual taxonomy of human and unhuman shapes through the Middle Ages where the *ecce homo* passion plays and paintings served to provide ocular proof of Christ’s (and by proxy God’s) human form through the Renaissance and Enlightenment eras’ elevation of proper (and properly formed) thinking man, to the modern narratives of monomyth, the ‘hero’s journey,’ as Joseph Campbell put it, assisted by various unhuman ‘others,’ the ‘human’ attempted to define himself vis-à-vis the ‘others’ (animals, objects, gods, and monsters) via visual iconography. ‘Anything not shaped as ‘human’ was typically deemed monstrous (from hybrid mythological creatures to severely disabled ‘elephant men’). Simultaneously, the category of ‘human’ was used to circumscribe the boundaries of belonging and the categories of valuation: groups that were deemed ‘sub-human’ were so designated for the purposes of commodification or extinction’ (Romanska 2019: 92). Likewise, the disabled body was either to be disposed of (as the carrier of ‘life unworthy of life’) or, if possible, to approximate the ‘human’ body.

‘The category of ‘human’ was a protective category marked by visual signposts. In Western culture’s anthropocentric worldview, the human body has always been given a central position; it has been imbued with special rights and privileges, both human and divine’ (Romanska 2019: 92). That hierarchy, established historically across multiple fields and disciplines— from the notion of the ‘Great Chain of Being,’ which derived

from Plato and which classified all beings into human, animal, and divine, through the Judeo-Christian ethos of man-made into the image of God, to Darwin's theory of evolution, which designates *Homo sapiens* as the supreme achievement of nature—has defined strict categories outside of which, when placed, one loses agency, the right to self-determination, all the rights and privileges granted to 'humans,' including the right to human dignity and to life itself. In the same vein, the disabled body was often placed either on the side of the unhuman, 'to have a disability is to be an animal, to be part of the Other,' or on the liminal side of the monstrous, freak, a hybrid of human and animal (Davis 1995: 40).

The modern concept of the 'posthuman' developed during the late 1990s and early 2000s (Hayles 1999, Wolfe 2010, Badmington 2000, Graham 2002, Bolter 2016), beginning three decades earlier with the poststructuralist critique (Foucault's 1966 essay on 'The Order of Things'; Derrida's 1972 essay on 'The Ends of Man'; and Hassan's 1977 essay 'Prometheus as Performer: Towards a Posthumanist Culture?') which initiated the idea that 'human' can be considered a historical – and not essentialist – category.<sup>2</sup> Posthumanism emerged in contrast to the traditional humanist ethics and aesthetics of the Renaissance and the Enlightenment, which assumed a cohesive notion of the human defined by certain inherent traits, such as the 'soul' and 'human nature,' visually represented through the intact human body. The notion of the 'posthuman' refers to the philosophical and technological disruption of that paradigm, prompting a reevaluation of established categories, not only those of the 'human' but also, most importantly, the 'subhuman.'<sup>3</sup> This reevaluation, in turn, has led to a broader questioning of fundamental concepts such as human rights, life, and death (with theorists such as Giorgio Agamben proposing the concept of 'bare life' to demarcate the ethical perimeters of the living body<sup>4</sup>). Posthumanism offers 'a new epistemology that is not anthropocentric and therefore not centered in Cartesian dualism. It seeks to undermine the traditional boundaries between the human, the animal, and the technological' (Bolter 2016: 1).

The posthumanist vision of the future, as portrayed in the works of science fiction writers and filmmakers, frequently paints a dystopian landscape inhabited by enigmatic beings of unclear origins and governed by a relativistic moral framework of a flat, post-Kantian world in which everything is allowed and 'might makes right.' In this paradigm, the conventional anthropocentric hierarchy that once delineated the boundaries of life and death is no longer applicable and the unsettling presence of monsters, cyborgs, and mutant animal-men pose a threat to humanity and its civilization (Romanska 2019: 84).

Katherine Hayles has argued that 'at the inaugural moment of the computer age, the erasure of embodiment is performed so that 'intelligence' becomes a property of

the formal manipulation of symbols rather than enaction in the human life-world' (Hayles 1999: xi). If 'machines can become the repository of human consciousness,' Hayles writes, '[then they] can become human beings. You are the cyborg, and the cyborg is you' (xi). By challenging the established boundaries of what qualifies as 'human,' the concept of 'post-human' simultaneously presents a destabilized perspective of the human body, its capabilities, and its position within the established hierarchies, Hayles continues: 'In the posthuman, there are no essential differences or absolute demarcations between bodily existence and computer simulation, cybernetic mechanism and biological organism, robot teleology and human goals'(xi). Or as Louis Lepage put it:

The posthuman theoretical perspective is that technology is transforming the human into the posthuman – a being ontologically indiscrete and hybrid: a human-technology cyborg. For some, the posthuman continues to operate dualistically, formed of immaterial informational pattern (which replaces mind or soul) and prosthetic body. For others, being posthuman means a materialistic and embodied ontology where consciousness, formerly the foundation of the human subject, is rendered epiphenomenal, a «bit part» in a larger system of cognitive distribution (2008: 138).

Posthumanism and biomimicry intertwine in a contradictory, oxymoronic way on a disabled body connected to either bionic, mechanical, or other assistive technology or prosthetics. The disabled have simultaneously become the epitomes of the bionic posthuman self while existing historically in the sphere of sub- and unhuman. The disabled characters on stage and on film have historically 'defined these categories of belonging: who is and who isn't human, whose life is worth living and whose isn't' (Romanska 2020). The disabled characters, such as the famous Elephant Man, for example, aware of their subhuman status, would often insist on their humanity, longing to be seen and treated as a 'human.'<sup>5</sup>

The concept of posthuman disturbs not just our understanding of what 'human' is but puts into question even the need for the category: it still does matter who is and who isn't 'human' because humans have special rights, but what form of consciousness, intelligence, sentiency, or self-awareness should be defined 'human' and what forms are not yet 'human' or already not 'human'? If disabled have always existed on the outskirts of what was viewed as the 'human,' does their now perceived status as 'posthuman' pre-grants them the status of former 'humans' or does it further alienate them from the 'human'? The posthuman aesthetic of the bionic body that comes with

new technologies is disrupting our perception of what the disabled body is, and which category on the hierarchy of rights does it belong to—while also putting into question the capacities and limits of the non-disabled body.

Recent research suggests that these conceptual contradictions influence the perception of people with disabilities: those ‘who use bionic prostheses are perceived as more competent than people with physical disabilities in general. ... [They can also] be seen as more competent than able-bodied individuals’ (Meyer 2018). At the same time, ‘this increase in perceived competence may be associated with a decrease in warmth such that people who use bionic prostheses are perceived as less warm than people with physical disabilities in general and as able-bodied people’ (Meyer 2018). The disabled are viewed simultaneously as posthuman by having greater capacities than humans, and as inhuman, and monstrous, by being devoid of human emotions. They embody a certain aporia, the inscrutability and limits of human self-conception. Critical posthuman disability studies can thus offer a blueprint for understanding the technological processes of humanization and dehumanization that the disabled have historically experienced and that are increasingly becoming – in the age of new tech – the ethical challenge of our new posthuman condition.

Historically, the disabled body was altered to approximate the ‘human’ body. Until very recently, the goal of the prosthetics industry was to create limbs that would serve as visual stand-ins for missing limbs that best mimicked human flesh and form. The functionality of the prosthetic was overshadowed by the desire for mimetic integration of the disabled body into required social and legal norms. Until the 1970s, for example, several U.S. cities observed ‘ugly laws,’ which criminalized the visibility of a disabled body (Schweik 2009). One such law from 1911 for the city of Chicago stated that ‘No person who is diseased, maimed, mutilated or in any way deformed to be an unsightly or disgusting object or improper person [is] to be allowed in or on the public ways or other public places in this city’ (Chicago Municipal Code, 1974, also reprinted in Schweik 2009: 293). The mimetic replacement of missing limbs restored the visual integrity of the disabled body, thus reasserting the normative limits and boundaries of the social, aesthetic, and legal framework of its acceptable public display. This mimicry was necessary to maintain the coherent image of what was deemed the ‘human’ body vis-à-vis the body of the other, non-human objects. Similarly, the technological capacities of prosthetic limbs were delineated by human capacities: the disabled were to be given as many ‘abilities’ as the non-disabled, but no more.

This perception of what the disabled body can and should do has changed with technological progress: not only do the newest bionic prosthetics often look as ‘unhuman’ as possible, but their capacities put into question the capacities and limits





Trailer for *FIXED: The Science/Fiction of Human Enhancement*. New Day Films. October 2, 2013. <http://www.newday.com/films/fixed.html>

of the non-disabled body. Thus, for example, why the debate about whether Oscar Pistorius and Markus Rehm's artificial legs gave them an unfair advantage over non-cyborg athletes unraveled many previous assumptions about disabilities, human capacities, and the ethics of human enhancement (Borden 2014). In 2007, Pistorius secured second place by defeating nearly every able-bodied athlete with whom he was competing, prompting

the conversation about what type of enhancements should and shouldn't be approved or banned in professional sports (Eveleth 2012). Pistorius and Rehm's abilities are not 'magical' or supernatural as it was often represented in the past, but rather a logical offshoot of our exploration of bionic technology (Brooks 2021).

This debate takes place in 'the media dynamics in which amputation and prosthesis are present is heavily marked by a futuristic perspective or focused on performance aspects. The drawing line between fiction and reality is often blurred, both fields seeming to overlap one another' (Gourinat 2020: 108). In that context, the disabled are no longer dis-abled, broken humans that need fixing or dispensing, but cyber humans, bionic men, pioneers of the cyber-tech-enhancement that everyone now practices on one level or another: 'These bodies are no longer perceived as crippled, reduced, or terrifying. [They] are now forging a new form of imaginary related to performance, to technological future, and even to the prospects of human enhancement' (Gourinat 2020: 107).

'By destabilizing the category of what is and isn't "human," the concept of "post-human" also provides a destabilized and destabilizing view of the human body, its capacities, and its hierarchy in the order of things' (Romanska 2019: 85): 'The posthuman view thinks of the body as the original prosthesis we all learn to manipulate, so that extending or replacing the body with other prostheses becomes a continuation of a process that began before we were born' (Hayles 1999: 2-3). Voluntary cyborg-like enhancements of the body (the replacing of human body parts with artificial ones of greater capacity—as opposed to compensating for particular disability) redefine previous categories of what is and isn't a disabled body: in comparison to the technologically enhanced bionic body, every body can be thought of as a disabled body.<sup>6</sup> By challenging the binaries of human and unhuman, disabled, and non-disabled, critical posthuman disability studies can open new investigative pathways of critical theory, including identity studies, posthumanism, techno-self studies, and object-oriented ontology.



Marco Donnarumma and Nunu Kong.  
*Alia: Zǔ tài*. April 24, 2020. <https://marcodonnarumma.com/works/alia-zu-tai/>

Foregger ('Dance of Machines'), and Russians, Boris Ferdinandov (Experimental-Heroic Theatre), and Vsevolod Meyerhold (biomechanics), who were devoted primarily to investigations of methods which would allow the human to metamorphose into a total machine, one in which everything, body, movements and emotions could be mechanically controlled – and Oscar Schlemmer's experimental mechanical ballets and stick dances – to Tadeusz Kantor's bio-objects (combinations of human actors and props that aimed to de-dignify human actors in favor of the objects), to the most recent performance artists, such as Lisa Bufano, who enhanced her missing legs and hands with specially designed Queen Anne table stills, Stelarc, a performance artist 'who has visually probed and acoustically amplified his body [with] medical instruments, prosthetics, robotics, Virtual Reality systems, the Internet and biotechnology' (Stelarc), Wafaa Bilal, who had a camera implanted in the back of his head (Ilnytsky 2010), Marco Donnarumma and Nunu Kong's technobjects of the performance piece, *Alia: Zǔ tài* (2018), or Amy Mullins whose work aestheticizes the disabled body fused with the object or the machine.<sup>7</sup> Theatre and performance, with its world of props and objects, have always been a site that explored the permeability of the boundary between humans and machines.

Contemporary disabled artists take these explorations even further by either aestheticizing their prosthetics or redefining their functions. Sophie de Oliveira Barata, in her Alternative Limb Project, treats prosthetics as works of art. Oliveira's custom-designed alternative prosthetics no longer aim at body mimicry; on the contrary, they display and reinforce their unhuman qualities, their object-ness. Oliveira's most famous client, the singer Victoria Modesta, has elaborate custom-designed prosthetic legs to match her on-stage costumes and persona. An actress Grace Mandeville has a custom-made feather wing arm that was designed to replace her missing hand, which makes her resemble a winged mythical creature. For Ryan Seary, a war veteran who

Critical posthuman disability studies can also provide a new lens through which to study and analyze past artworks, particularly in the field of theatre and performance studies, offering new insights into well-known milestone works and artists. Experimental theatre, and performance artists have always been intrigued by the boundaries between the human and the unhuman, the living and the material worlds: from the early twentieth century directors, such as Ukrainian Nikolai

lost a leg in Afghanistan, Oliveira designed a leg with visible bones and muscles, combined with a robotic knee and lifelike foot (McKenzie 2013). These prosthetics no longer aim to mimic the human body or even to adhere to its machine-like, bionic appearance. They intentionally disrupt what it means, visually, to be human, emphasizing the hybrid nature of the human-prosthetic mode of being that we all came to inhabit. Likewise, popular 3D biomech (biomechanical) tattoos designed to mimic bionic limbs suggest a shift in perceptions of disability and its culture: here, it is the non-disabled body that attempts to mimic the disabled body connected to the machine, not vice versa.



Victoria Modesta. *Prototype*. Channel 4 Entertainment. Dec 12, 2014 <https://viktoriomodesta.com/>

However, critical posthuman disability studies can make perhaps the most important contribution in the realm of ethical debates surrounding modern technologies. When discussing issues of human augmentation and enhancement, ethicists are generally divided between two groups: transhumanists (Nick Bostrom), who believe in unlimited access to enhancement technologies, and bioconservatives (including Leon Kass, Francis Fukuyama, George Annas, Wesley Smith, Jeremy Rifkin, and Bill McKibben), who advocate globally coordinated banning or limiting of such technologies. Transhumanists believe that ‘Ultimately, it is possible that such enhancements may make us, or our descendants, ‘posthuman,’ beings who may have indefinite health-spans, much greater intellectual faculties than any current human being—and perhaps entirely new sensibilities or modalities—as well as the ability to control their own emotions’ (Bostrom 2005: 203). Bioconservatives want to see some of the augmentative technologies banned globally because they ‘might undermine our human dignity or inadvertently erode something that is deeply valuable about being human but that is difficult to put into words or to factor into a cost-benefit analysis’ (Bostrom 2005: 203).

Bioconservatives have two fears of unregulated human enhancement: one is that the concept itself is degrading (lacks human dignity), and the other is that the posthuman might imperil ordinary (non-cyber-enhanced) humans (our disparities in wealth, for example, will produce a class of cybernetically enhanced post-humans). The concept of ‘human dignity’ and what it means provokes several responses. Francis Fukuyama warns that ‘Denial of the concept of human dignity—that is, of the idea that there is something unique about the human race that entitles every member of the species to a higher moral status than the rest of the natural world—leads us down a very perilous path’ (Fukuyama 2002: 160). Contradicting Fukuyama, Nick Bostrom argues in favor of

what he considers ‘posthuman dignity’ (which he understands in the legal context): ‘We can work to create more inclusive social structures that accord appropriate moral recognition and legal rights to all who need them, be they male or female, black or white, flesh or silicon’ (Bostrom 2005: 210).

All of these and other issues that have emerged in recent years at the crossroads of posthumanism, disability, and biomimicry have led to the development of what we can now call critical posthuman disability studies, a field well-equipped to further untangle and reconceptualize the ethical, legal, and philosophical boundaries of human enhancement, species belonging, life and death, and human rights.<sup>8</sup> The posthuman biomimicry, and the prosthetic aspects of digital and AI technologies presuppose a form of disabling of the human body: a body without any connection to some type of machine is an inferior body. In this context, understanding the historical dynamics, critical, philosophical, and ethical debates that have dominated disability studies can provide a framework for how we reconceptualize our posthuman, hybrid future in which our existence with the machines that redefine previous hierarchies is inevitable.<sup>1</sup>



**Figure 2:** 3D Biomechanical Tattoo. Photo Brett Jordan. February 12, 2012. CC BY 2.0 DEED Attribution 2.0 Generic License. Link <https://www.flickr.com/photos/x1brett/6850618707>.

## Notes

- <sup>1</sup> The earlier version of this article was presented as plenary paper at the American Society for Theatre Research in 2017, (Special thanks to Robin Bernstein for reading it as I wasn't able to attend), and as an invited lecture at Notre Dame University (2016).
- <sup>2</sup> The concept of transhumanism was first conceptualized by Julian Huxley in 1927. Biologist and eugenicist, Huxley wanted 'Man remaining man, but transcending himself, by realizing new possibilities of and for his human nature.' (*Research Anthology on Emerging Technologies and Ethical Implications in Human Enhancement*. United States: IGI Global, 2020: 108). The term posthuman was first coined, however, by Ihab Hassan in his 1997 essay 'Prometheus as Performer: Towards a Posthumanist Culture?' (1977. *The Georgia Review* 31.4: 830–850).
- <sup>3</sup> As Jacob Juntunen notes: 'In fact, the Nazi term for people they deemed unworthy of life was *'untermensch'*, meaning sub-human, an object that merely appears human, like Kantor's bio-objects. An idiom coined in 1922 by the Harvard historian Lothrop Stoddard in an American book on eugenics published by Scribner and Sons, *untermensch* is not the same German word as 'animal' (*tier*) or 'slave' (*sklave*). Instead, *untermensch* connotes something connected to a human, but somehow below.' (Juntunen, Jacob Micah 2020 Human/Object/Thing: Kantor's Puppets and Bio-objects. *Tadeusz Kantor in Context*. Evanston Illinois: Northwestern University Press. 29–40: 32).
- <sup>4</sup> Outlining his concept of 'bare life,' Agamben describes it as 'a zone of indistinction and continuous transition between man and beast' (*Homo Sacer: Sovereign Power and Bare Life*, trans. Daniel Heller-Roazen. Stanford: Stanford University Press, 1998: 109). Elsewhere, Agamben writes about 'bare life' as that which belongs only to those excluded from the 'human' race: 'In Western politics, bare life has the peculiar privilege of being that whose exclusions found the city of men' (7). In Auschwitz, Agamben notes, 'the *Muselmann* [prisoner who lost the will to live and who ceased to respond to external stimuli, enclosed in his own autistic-like reality] in some sense marked the moving threshold in which man passed into non-man and in which clinical diagnosis passed into anthropological analysis' (2002 *Remnants of Auschwitz: The Witness and the Archive*. New York: Zone Books. 46–47).
- <sup>5</sup> In her book, *Beats of Burden: Animal and Disability Liberation* (2017), Sunaura Taylor argues that because disabled have been historically perceived and referred to as animals, the liberation of both, the disabled and the animals is inevitably interconnected.
- <sup>6</sup> See Nedkova, Iliyana and Byrne, Chris. 2004 Designer Bodies: Towards the Posthuman Condition. *Art Research Communication* Available at <http://web.archive.org/web/20100324040903/http://www.a-r-c.org.uk/db>; and bodyfuturist 2014 Voluntary Cybernetic Enhancement. *Institute for Ethics & Emerging Technologies*, June 3 Available at: <http://ieet.org/index.php/IEET/more/niman20140603> [Last accessed October 29, 2023].
- <sup>7</sup> Writing about disability performance and technology, Tony McCaffrey notes that
- 'New aesthetic challenges and possibilities emerge from the confrontation of such performers with assumed norms of economy and elegance in movement, clarity of speech, and notions of agency implicit in certain types of virtuoso performance. The performance of people with disabilities faced with technology is political. It is so not only in terms of the specific politics of the perception of disability in performance, encompassing accusations of exploitation and expectations of inclusion or emancipation but also in revealing the shared vulnerability and precariousness of the contemporary subject—a dis-ability or disempowerment that confounds the binary of ability and disability.' (2018 *Technology and Disability Performance: Our Shifting Perspectives*. *TheTheatreTimes.com*. 4 August. Available at <https://thetheatretimes.com/technology-and-disability-performance-our-shifting-perspectives/>)
- <sup>8</sup> See Goodley, D., Lawthom, R. & Runswick Cole, K. Posthuman disability studies. *Subjectivity* 2014 7, 342–361. Available at <https://doi.org/10.1057/sub.2014.15>; Lundblad, Michael 2020 Animality/ Posthumanism/ Disability: An Introduction. *New Literary History*, vol. 51 no. 4: v–xxi. *Project MUSE*. Available at <https://doi.org/10.1353/nlh.2020.0040>; and Murray, Stuart 2020 *Disability and the Posthuman: Bodies, Technology, and Cultural Futures*. Liverpool University Press. Available at <https://doi.org/10.2307/j.ctv11qdtsh>.

## Competing Interests

The author has no competing interests to declare.

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