

The Development of Posthuman Theory and its Application Through the Lens of STS Studies

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Abstract. Utilitarian theory's ideal could not be adequately carried out in practice; humanism proved insufficient; antihumanism was problematic. Posthumanism was proposed and developed to cope with the changing science, technology, and society by removing the anthropocentric element of humanism and starting to grant non-human beings intrinsic value instead of merely an instrumental one. Despite human beings' exact progression in a posthuman world, posthuman theory can nevertheless serve as a guiding ideology when viewing specific cases and engaging in discourse, resulting in a far-reaching influence on legislature and society.

Keywords: Posthumanism; Science, Technology, Society (STS) Studies; Anthropocentrism; Public Policy.

1 Introduction

Based on utilitarian theory, the principle of proportionality has been regarded as the standard for treating ethical concerns in the human law system throughout history (Engle, 2012). [1] With the development of cutting-edge science and technology like gene editing, the Internet, and Artificial Intelligence (AI) raising an unprecedented number of moral concerns and ethical issues, society ought to develop a new paradigm to match rapid advancements since science and technology cannot cast aside their inherent social nature. Through revisiting a patent law case concerning moral judgment in the 1970s, this essay exposes the inherently inextricable paradox of utilitarian theory upon which the decisions were established. Then, considering the ever-untenable humanism theory, this essay proposes an approach more suitable for contemporary society to conceive of humans as a species and their place in the broader world: Posthumanism. When Nicolaus Copernicus dispelled the widespread belief that Earth was the center of the universe, it revolutionized the era by questioning humans' position and urged them to reconsider their relationship with the world. Can we predict a similar outcome when posthumanism, a de-anthropocentric stance, is adopted?

Since the emergence of gene editing biotechnology, genetic manipulation of animals has raised controversial moral debates in society. Patents for commercial use thus stimulated further ethical concerns. OncoMouse (the prefix Onco means tumor in Greek), a

genetically modified animal with active cancer genes and a predisposition to cancer, was genetically modified by a group of researchers at Harvard Medical School in the early 1980s. Although the patent-eligible subject matter typically does not include what already existed in nature, OncoMouse set a precedent. It became the first living being to be patented by the US Patent and Trademark Office in 1988, because it was considered a new commercial invention despite being alive. As intellectual property, Oncomouse stimulated research into cancer, proving mechanisms of tumorigenesis and offering alternative treatments to human diseases (Douglas & Erwin & Richard, 1970). [2] However, another kind of genetically engineered laboratory mouse, labeled the hairless mouse, was widely criticized and failed to receive any patents. How do the genetic make-up and research purpose of laboratory animals affect their destiny? This essay will first highlight the difference between the ideal and application of the utilitarian approach through the Europe Patent Office's "inconsistent" jurisdictions in patenting two sets of laboratory transgenic mice and then strives to offer possible and practical solutions by gearing away from anthropocentrism and instead employing posthuman theory.

2 Part I: EPO case & Utilitarianism

2.1 Harvard's Oncomouse Case

Litigation and lawsuits regarding the patentability of genetically engineered animals, especially Oncomouse, were raised in the 1970s and peaked in the 1990s. The European Patent Convention (EPC) Article 53(a) stipulated that the Europe Patent Office's decision should be based on "a careful weighing up of the suffering of animals and possible risks to the environment on the one hand, and the invention's usefulness to mankind on the other." Article 53(b) excluded patents on "animal varieties or essentially biological processes for the production of…animals." The UK proposed similar regulation, as UK Patent Act 1977 s.1(3) stated: "A patent shall not be granted for an invention the commercial exploitation of which would be contrary to public policy or morality" (Knowles, 2003). [3] The vague usage of language in the quotes above, as evidenced in phrases like "usefulness to mankind" and "morality," which had no quantifiable indicators, should be noted, as such word choice rendered the clauses open to interpretation and created difficulties in application.

Based on the morality and ethics clauses mentioned above, the Europe Patent Office (EPO) weighed the advantages (namely, Oncomouse's contribution to society, especially its improvement to cancerous medical research) and disadvantages (namely, Oncomouse's suffering, animal welfare concerns, and potential environmental risks). Then, the EPO decided to license a patent to OncoMouse in 1992, but the patent has been in ethical and technical controversy ever since. Despite disputes on moral grounds and protests from religious groups and animal welfare activists, after balancing Oncomouse's benefit to humankind in general and ordering limits on the number of usages, the EPO still concluded that the Harvard/Oncomouse case did not offend the principles of morality in UK Patent Act 1977 s.1(3) and the EPC Article 53(a). (Case Law of the Boards of Appeal, EPO)^[4]

2.2 Upjohn's Hairless Mouse Case

Following this trend, another trans-genetic laboratory animal, however, encountered an utterly different treatment. Upjohn Company, a pharmaceutical manufacturing firm, produced hairless mice in 1992, shortly after the advent of OncoMouse. The hairless mouse was designed to help develop medicine to treat human baldness and facilitate the promotion of wool production techniques. In this case, the EPO adopted the same approach as when treating OncoMouse's moral and ethical aspects: weighing the inventions' pros to humans and cons to animals, the environment, and public morality. (Yan, 2011). ^[5] However, the outcome diverged significantly from the previous case. The Upjohn hairless mouse was not able to receive a single patent, because it was determined that animal suffering outweighed the overall benefits people would gain, as concluded by the EPO after its "careful weighing." The EPO rejected Upjohn company's hairless mouse patent application as contrary to EPC article 53 (a) and, therefore, not patentable (Case Law of the Boards of Appeal, EPO). ^[6]

2.3 The application of utilitarianism in the patent system contradicts Jeremy Bentham's original intention.

The patent system was enacted to award those who make contributions to society by inventing something new that is of public value. The patent offers inventors the temporarily exclusive right to the benefits generated by their inventions. In turn, the patent system is believed to have the potential to stimulate creativity because people would be motivated by the fact that they can enjoy the fruits of what they invent. It is generally considered a virtuous circle, as both parties win: the inventors accrue profit; the public benefits from the inventions (Kitch, 1977).^[7] Since the system itself was initially designed to protect innovations that promote public welfare, it seems logical for the EPO to adopt a utilitarian theory when treating ethical quandaries. In the cases mentioned above, the EPO developed a utilitarian balancing test intended to estimate the potential societal contribution of genetically modified laboratory animals against their suffering and moral disapproval of exploitation by the public. The Oncomouse passed: the hairless mouse failed. The question arose. Because people cannot measure, gauge, or estimate animals' suffering in any way, the EPO could only draw the balance point from a human perspective. Just because cancer diseases are generally more severe than baldness, a common judgment in our society, it is not sufficient enough to prove and conclude that animals' suffering should fall between these two physical conditions. Such a seemingly plausible comparison, balancing, and calculation cannot withstand scrutiny. Indeed, in the application of utilitarianism theory, "the greatest number" tend to disproportionally favor human society instead of the whole ecosystem or at least sentient organisms.

As a staunch defender of animal welfare, Jeremy Bentham, one of the founders of utilitarianism, would likely disapprove of this application of utilitarian theory. He was the first Western philosopher to grant animals equal consideration without seeking support from any established religion (Kniess, 2019).^[8] Moreover, he likened the mistreat-

ment of animals to slavery and racial discrimination. (Jeremy Bentham, 1988).^[9] Indeed, by claiming the judgment of righteousness depends on the greatest happiness of the greatest number, Jeremy Bentham never narrowed the "greatest happiness of the greatest number" to the mere sum of pleasures and pains of the largest population of human beings. However, the limitation of human beings excludes the possibility of equally and justly considering the psychological experience of all agents, contrary to what Jeremy Bentham intended to achieve. However hard the legislature and courts worked, this holistic consideration cannot be turned into practice under the guidance of utilitarian theory, due to our inherent limitations; we judge from the senses we possess. "Man is the measure of all things," as Protagoras proposed two thousand years ago. This spells the only possible form of the application of utilitarianism in society: utilitarianism is reduced to anthropocentrism in practice.

3 Part II: Humanism, Anthropocentrism, Posthumanism

For one thing, anthropocentrism, as the term's literal meaning suggests when divided into two components (anthropo-centrism), implies human-centeredness or human-supremacy. The commonly adopted conception of the word is in accord with the Cambridge English Dictionary's definition: "a belief in humans and their existence as the most important and central fact in the universe" (Cambridge University Press). For another, as it occurred in the early fourteenth century, dating back to the Renaissance, humanism was initially a cultural movement organized to loosen the shackling of church control and free humans from living under the shadow of God (Weitzenfeld, 2014).^[10] Obtaining support from ancient Greek thinkers, the activity's guiding theory, humanism, was thus proposed to request a departure from religion or religious party's control and instill a renewed belief in individual power and agency. Gradually, one of the goals of humanism developed close to prioritizing human welfare over other objectives (Kopnina, 2020).^[11] Of course, in the process, humanism and anthropocentrism converge on the belief that any non-human existence serves as a means, a tool, or an instrument for humans, who profess to be the ultimate end.

Recently, however, many scholars have highlighted the decline and demise of humanist theory and its incidental anthropocentric viewpoint. Rosi Braidotti, a contemporary philosopher and theorist, criticized the restriction of humanism in its inefficiency in answering the question of "what counts as human," which, in her opinion, is part of the reason that people should begin to shift to a post-humanism theory (Braidotti, 2013, p.104).^[12] Indeed, with growing advocacy for animal subjectivity and research into AI and the virtual world, the original humanism theory is failing, encouraging humans to reconsider what count as humans and their relationship with non-human beings.

3.1 Inanimate world: human/AI distinction

Today, AI is an essential part of our life. We depend on AI for quality control, entertainment, and language translation, while other potential applications, like autonomous driving, writing poetry, and healthcare solutions, are turning into reality at a staggering rate (Gurkaynak & Yilmaz & Haksever, 2016). ^[13] The abilities once exclusive to human beings can not only be done but also be done more quickly and efficiently by intelligent machines, blurring the boundary between humans and automation.

The concern and discussion started as early as the advent of the computer. One of the earliest regulations to maintain the line between AI and its inventor, namely humans, can date to Isaac Asimov's Three Laws of Robotics, which was proposed in his 1942 short story "Runaround" (Anderson, 2016).^[14] One of the earliest efforts to determine and underscore this line can be attributed to Alan Turing's Turing Test in the 1950s: if the questioner cannot tell whether the respondent is human, the subject is considered to pass the Turing Test, and is therefore human (French, 2000).^[15]

Even today, when the advancement of AI and the virtual world seems tantalizing and even unfathomable, scientific fiction, movies, and media have begun to explore and blur the line between AI and what it means to be human. As early as 1982, the iconic film Blade Runner used the provocative idea that intelligent machines can be "more human than human" (Scott, 1982), ^[16] and Ex Machina, a science fiction film produced in 2015, built on and managed to pin on the precise moment the line dissolves (Garland, 2015). ^[17] In addition to literature work, the fact that jobs like accountants, deliverymen, and security guards are being replaced by robots who can perform them more efficiently causes concern and disturbance in society, urging not only scholars but all people to reconsider what makes them human, what their role is, and their relationship with machines.

With the unknown looming closer, people turn to animals to try to re-establish the distinction. According to Yuval Noah Harari, an Israeli public intellectual and professor at the Hebrew University of Jerusalem, it is precisely the unknown and the anxiety people feel when facing superior intellectual machines that rekindles interest in reexamining our relationship with and treatment of the "so-called lower life form"—animals, as we are becoming one ourselves (Harari, 2018, p.93). ^[18] Although the relationships will surely vary with different agencies, Harari suggested the analogy is "the best archetype we can actually observe rather than just imagine" (p.65). ^[19]

3.2 Animate world: human/animal distinction

What sets the insurmountable difference between humans and other organisms or inorganic substances? Where exactly does the impregnable distinction lie? Is it the ability to employ tools, as commonly claimed? According to Jane Goodale's observation documented in her book In the shadow of man, however, there were tool manufacturing activities amongst chimpanzees in the Gombe area of Tanzania. They utilized thin twigs to fish for termites in holes in the ground and stone tools for cracking kernels (Goodale, 1983). ^[20] Many dismissed such ideas as naïve, for the "unique" complexity and intelligence of the tool using behaviors cannot be comparable. Still, it should be admitted that the difference is a matter of extent or degree regarding the tool-using capability instead of an unequivocal "yes/no" or "can/can't" distinction as commonly conceived.

The idea of blurring the boundary between human beings and non-human animals indeed causes discomfort for many people. Among the critics is Huaihong He, a Chinese scholar specializing in ethics and philosophy at Peking University. In his book, do

humans have a future? He argued for the exclusive uniqueness of human beings from non-human creatures as in our "complicated and innovative intuition" (He, 2017). [21] He took a mild anthropocentric stance in defending the existence of the "soul" for humans but not for other creatures. Harari cast doubt on this exact point in his work Homo Deus: A Brief History of Tomorrow by seeking support in psychology, biology, and neuroscience. Despite scientists' efforts to dissect every part of humans and analyze every section of our brains, no area in our whole body is decisively attributed to possessing the "soul." Harari disproves the term "soul" by alluding to its immortal connotation, concluding that humans and animals are similar in that they do not possess a soul but have "consciousness and a complex world of sensations and emotions," which are the result of random mutations and natural selection as described by Darwin (Harari, 2018, p.120). ^[22] Furthermore, if people indeed consider animals as insentient beings, how come pharmaceutical companies utilize laboratory rats to test antidepressant medicine? The inconsistency appears in this paradox. Humans take advantage of animal similarities yet fail to give these same characteristics equal weight when present in a non-human being. Cells, animals, human brains, and algorithms are inherently "complex adaptive systems" (Waldrop et al., 2020, p.200), [23] complicated systems that actively observe and change accordingly.

3.3 Humanism, Antihumanism, and Posthumanism

Anti-humanism.

The complete opposition of humanism should be anti-humanism. Antihumanism ideologies like fascism and communism, which flourished in the 1960s and 70s, focused on and disputed the individuality element of the humanism model (Braidotti, 2013). ^[24] They argued for the collective good of people, or as it turned out in history, a certain group, rather than the freedom of every individual. More recent antihumanism took form in racism and the rise of "the useless class" (Liu, 2009). ^[25] Such reversion and rejection of humanism narrowed the range of "people" that should be considered, reinforcing hierarchies in human society. Therefore, antihumanism ideologies failed because they eliminated the wrong element from humanism theory.

Posthumanism.

Other criticisms of humanism soon emerged. Nietzsche addressed the "opposite valuation" by emphasizing that "an extreme overvaluation of man has generated in man" (Brewer, 2021). ^[26] In this sense, Nietzsche is one of the first thinkers who developed a model that differentiated itself from both humanism and antihumanism (Nitzsche, 1901). ^[27] Voices that criticize humanist theory but do not follow antihumanism ideology vary in certain aspects; they collectively form under the label posthumanism, for the literal meaning of the term post-humanism portrays a model that is different from yet built on humanism and distinguished from anti-humanism.

The root of posthumanism theory can be traced back to the three Macy conferences about cybernetics from 1946 to 1953, where scholars from a diverse range of fields (mainly in physics, biology, and computer science in chronological order) strived to revise humanism theory by removing the unique privileges of the human species as compared to other organic beings (i.e., animals) and inorganic beings (i.e., environment and machines) (Wallach, 2019). ^[28]

Posthumanism comes in three strands, reactionary, analytical, and critical posthumanism (Braidotti, 2013),^[29] yet they converge on clearing away the anthropocentrism element from humanism theory.

Posthumanism's breakthrough: a rejection of anthropocentrism.

The application of utilitarian theory failed partly because it justified an anthropocentric viewpoint with the claim that humans cannot perceive the world and morality independent of our own limitations (William, 1993). ^[30] Posthumanism could not and does not mean to directly solve this immanent impasse; rather, it calls on the fact that, despite this bar, people can still grant non-human beings intrinsic value as opposed to a merely instrumental one. Indeed, white, heterosexual men still cannot experience the feelings of people of color, the LGBTQ community, and women. However, this does not mean the former cannot understand and acknowledge the latter groups' intrinsic value and independent existence. In this sense, arguments that charge posthumanism as discursive due to the limitation of our senses do not withstand criticism.

Posthumanism suggests a new model of the repositioning of human beings, a deprivileging outlook and a shift in frame of reference. In a de-anthropocentric posthumanism viewpoint, other beings—whether organic or inorganic, sentient or insentient, living or dead—exist in their own right rather than as resources people utilize and exploit. They have their own inherent meaning, regardless of precisely what the meaning refers to or whether there is any meaning at all; Like people, their existence does not depend on ours as the necessary premise. Posthumanism abandons teleology while embracing coexistence.

It should be noted that posthumanism does not mean leaving human interest aside and arbitrarily rejecting the usage of non-human beings. On the contrary, it is precisely one of humanity's rare qualities—the awareness and consciousness of morality as individuals and ethics as a society—that helps people recognize the degree to which human activity affects non-human beings.

Posthumanism is not a branch of antihumanism; it is a collective label for theories that question and strive to abolish one fundamental tenet of humanism: anthropocentrism, human speciesism, human exceptionalism, human superiority, and human chauvinism.

Part III focuses on where we are in the development of the posthumanism world and how such a viewpoint sheds new light on ethical questions.

4 Part III: Implication and application of posthumanism

4.1 Society's current position in a posthumanism world

With different attitudes toward biotechnology and different interpretations of posthumanism, scholars' opinions vary on our place in the process of a posthumanism world. One example is Francis Yoshihiro Fukuyama, an American Japanese political scientist, who rejected the notion that people are already on the way and argued for policies regulating biotechnology, allowing only those that "benefit human society" to emerge (Fukuyama, 2017, p.194). ^[31] On the contrary, as he himself points out in the same book, financial and political incentives, along with competition among powers, can limit large-scale technology, like nuclear weapons, yet often proves ineffective in limiting biotechnology which depends on "smaller, less lavishly funded labs" (p.202), ^[32] rendering it impossible to regulate under the current legal system. Furthermore, any biotechnology itself is neither beneficial nor destructive. It is the usage of it by people that sets the tone. Legislatures focused on limiting the inevitable progress of biotechnology are ineffective compared to those regulating its application. Indeed, as the verb tense in N. Katherine Hayles's book title how we became posthuman suggests, the societal revolutions brought by technologies have already made us posthuman by the end of the last century (Hayles, 1999). ^[33]

Although opinions and rate of progression may vary worldwide, posthuman theory can serve as a "generative tool to help us re-think the basic unit of reference for the human in the bio-genetic age known as 'Anthropocene'" and "help us re-think the basic tenets of our interaction with both human and non-human agents on a planetary scale" (Braidotti, 2013, p.5). ^[34] Regardless of human beings' exact position in the process, posthumanism has the potential to take effect in our life.

4.2 Human beings' role

Guided by posthuman theory, animals exist in their own right without being reduced to human-like characteristics. Like human society's social class, ethnicity, and sexual identity, animals can be categorized and recognized without being abused as mere means, instruments, or tools. However, two premises should be noted first before delving into the application and implication of posthuman theory.

(1) the ultimate goal here is not to moralize the human-nonhuman relationship but to seek an approach to confront and cope with the ambivalent ecological future (Pacini-Ketchabaw & Nxumalo, 2017).^[35]

(2) Granting animals intrinsic value does not in any way render human beings unaccountable for our activities. We can create effective policy, engage actively, and enact financial incentives; the impact of human activity cannot and should not be downplayed at any level in this process because of the human capacity to regulate and adjust.

While a non-anthropocentric approach throws human beings from an unshakeable throne, people should not be exempt from obligations to non-human beings and ignore the impact of their initiatives and engagement due to the organization of our society. Ultimately, with the posthuman model, people should take advantage of their awareness, consciousness, and capacity to act so as to proactively maintain equilibrium.

4.3 Posthuman theory's current influence on law

Under humanism and anthropocentrism's guidance in terminology, animals are referred to as properties; in other words, they are "owned" by individual people. However, 18

American municipalities and one state's legislation shifted the term of people with companion animals from "owner" to "guardian," stressing the non-property characteristics of non-human beings so as to arouse consciousness and stimulate policy on companion animals which "further the animal's interests as a cared for relation instead of the human's interests as the property owner" (DECKHA, 2013). ^[36]

This semantic change may seem small, yet it marks a groundbreaking starting point. The potential effect of such a change can be understood in this hypothetical analogy. If the legislature includes parents as the owners of their children rather than guardians, problems emerge: an authoritarian education approach may be justified; children's freedom to grow and explore as a person can be limited with legal basis and support; domestic abuse can be excused because parents technically own them, just like the owner of a chair can smash it into pieces without being charged. When referring back to the human-animal relationship, although following efforts to work out practical clauses for people to adopt and ensure its implementation are necessary to make this change influential, only after this shift can potential activities find a foundation and then take place.

Indeed, acknowledgment and recognition for nonhuman beings' rights have been recently established in legislatures and enshrined in legal systems like the World Trade Organization (WTO) (Katie, 2016). ^[37]In addition to animal activists, environmentalists who have succeeded in modifying the law also seek support from posthumanism. For instance, the rivers in New Zealand, Australia, and India were granted formal legal rights, allowing for innovative management to be enforced (O'Donnell & Talbot-Jones, 2018), ^[38] and today the people's movement is pressuring the UN to draft the Universal Declaration of Rights of Mother Earth.

4.4 Barriers to universal application and possible solution

The resistance force takes form in diverse fields: (1) the public's traditional way of thinking & acting and vested interest groups such as (2) the power of the capital and (3) the power of the political bloc. While the concept shift in people's minds is crucial, it is not enough because only with clear policy can any theory find the basis and be followed by the masses. Two approaches can cope with the current system and put posthuman theory into practice: case and discourse.

Value and making the best of specific cases and events.

To revisit the case mentioned in the first part of this paper, the precedent of the Oncomouse patent is considered as a single, discrete event without further referential value. As the EPC clearly stated, "it could not therefore be assumed that the sole example described in the application - that of mice - could be extended to all other mammals" (European Patent Office, 1970).^[39] As long as the legislature sticks to utilitarian theory as the standard, inconsistency of judgment can only be set aside as exceptions, while fundamental changes in the legal system cannot be induced. As such exceptions accumulate, it would cause chaos in current legislation, because whether following the clauses themselves or precedent cases would be ambivalent. On the contrary, people should take advantage of the numerous "exceptional" cases to revise legislation before it's too late.

Snail darter's case and its influence.

In 1933, during the Regression, President Roosevelt established the Tennessee Valley Authority, which was in charge of utilizing and employing the river resources (Atherton, 1949).^[40] In the 1960s, the VYA invested in the Tellico Dam project. Around that time, the National Environmental Policy Act of 1969 (NEPA) and the Endangered Species Act of 1973 were enacted. Hill, a British biologist employed in the US, noticed that a species of freshwater fish called the "snail darter" was endangered, and that the Tellico Dam project would severely damage its only critical habitat, the Tennessee River. As the snail darter, or Little Tennessee River, was listed as an the endangered species in 1975, it was officially under the protection of the law, resulting in an intangible battle between one species and billions of invested money (Murchison, 2007). ^[41] If the actors in this case followed utilitarian theory, which the EPO relied upon in the patent system as mentioned in part I, the latter would surely outweigh the former, an unknown species without a specifically determined contribution to the ecosystem, economics, and society. Although the latter did prevail in the local jurisdiction, the case ended with a Supreme Court decision: since the endangered species can possess unpredictable value to the planet, the mere calculation of number, though enormous, cannot offset such a fact (Murchison, 2007). [42] Consequently, the total loss of all the special qualities of the river valley would have been threatened. Indeed, financial interest cannot outweigh any responsibility to preserve biodiversity of the planet upon which the ultimate human interests are based.

The case itself and the fact that the Supreme Court rendered the "classic assertion of a basic conflict between environment and economics utterly wrong" generated long-lasting and far-reaching influence (Plater, 1985).^[43]

People should make full use of such meaningful cases: stimulating attention and discussion both in the public and legislature, ultimately sparking change in legislation and influencing the following practices.

Discourse- Deliberative Democracy.

Deliberative democracy, or deliberative engagement, is a form of government in which free and equal residents justify decisions by offering one another "mutually acceptable and generally accessible reasons" in order to place people closer to government affairs and decision-making and "reach conclusions that are binding in the present on all citizens but open to challenge in the future" (Gutmann & Thompson, 2004). ^[44]

With deliberative democracy connecting people, agreement around the world becomes possible. For instance, a normative international animal welfare tribunal attributed as "an ethical responsibility for human beings in general" and "a globally recognized issue," indicating animals' status at the international level in 2014 for the very first time in history (Shaffer & Pabian, 2015).^[45] By incorporating the posthuman element into international case law through deliberative democracy, instead of limiting it to local and domestic matters, the posthuman theory has the potential to penetrate the legislature worldwide.

5 Conclusion

With the guidance of posthumanism correcting humanism's defects by shifting away from anthropocentrism and granting non-human beings inherent value, human beings are developing a new system to address the ever-revolutionizing science, technology, and society. Indeed, the specific case's influence on the legislature and the development of deliberative democracy make the posthuman theory more practical than the utilitarian theory, as proven throughout history. With cases and discourse shaping the path, people finally possess a tool, posthumanism, to gradually approach Hindu's bráhman in Upanishads (Radhakrishnan, 1994) ^[46], Michel Foucault's truth in The Order of Things: An Archaeology of the Human Sciences (Foucault, 1994), ^[47] and Daoist Zhuangzi's idea in the Equality of Things.

References

- 1. Engle, E. (2012). The history of the general principle of proportionality: An overview. Dartmouth LJ, 10, 1.
- 2. Douglas H., Erwin F., Richard D., P. (January 01, 1970). The origins of oncomice: a history of the first transgenic mice genetically engineered to develop cancer. Genes & Development,
- Knowles, L. P. (2003). Of mice and men: patenting the oncomouse. The Hastings Center Report, 33(2), 6.
- ECLI: EP: BA:2005:T086601.20050511, Case Law of the Boards of Appeal, EPO, https://www.epo.org/law-practice/case-law-appeals/recent/t010866eu1.html ^{TT}_{SEP}T 0019/90 (Onco-Mouse) of 3.10.1990, EPO https://www.epo.org/law-practice/case-law-appeals/recent/t900019ep1.html
- Onco-Mouse II, (1990), Case No. T19/90--In re President and Fellows of Harvard College, IIC; international review of industrial property and copyright law, https://pubmed.ncbi.nlm.nih.gov/12599394/
- 6. Yan, M. (2011). Morality-an equivocal area in the patent system.
- Yong, J. (2010). Morality and biotechnology patent laws. International Journal of Private Law, 3(1/2), 148. https://doi.org/10.1504/ijpl.2010.029607
- 8. Kitch, E. W. (1977). The nature and function of the patent system. The Journal of Law and Economics, 20(2), 265-290.
- 9. Kniess, J. (2019). Bentham on animal welfare. British Journal for the History of Philosophy, 27(3), 556-572.
- 10. Jeremy Bentham, The Principles of Morals and Legislation 310-11 n 1 Prometheus 1988
- 11. Cambridge University Press. (n.d.). Anthropocentrism. In Cambridge dictionary. Retrieved August 2022, from https://dictionary.cambridge.org/us/dictionary/english/anthropocentrism
- 12. Weitzenfeld, A., & Joy, M. (2014). An overview of anthropocentrism, humanism, and speciesism in critical animal theory. Counterpoints, 448, 3-27.
- Kopnina, H. (2020). Anthropocentrism and Post-Humanism. The International Encyclopedia of Anthropology, 1-8.
- 14. Braidotti, R. (2013). The Posthuman. Polity Press.

- 15. Braidotti, R. (2022, January 25). Posthuman Feminism (1st ed.). Polity Press.
- 16. Gurkaynak, G., Yilmaz, I., & Haksever, G. (2016). Stifling artificial intelligence: Human perils. Computer Law & Security Review, 32(5), 749-758.
- 17. Anderson, S. L. (2016). Asimov's "three laws of robotics" and machine metaethics. Science fiction and philosophy: from time travel to superintelligence, 290-307.
- French, R. M. (2000). The Turing Test: the first 50 years. Trends in cognitive sciences, 4(3), 115-122.
- 19. Scott, R. (Director). (1982). Ridley. Blade Runner [Film]. Warner Bros.
- 20. Garland, A. (Director). (2015). Ex Machina [Film]. Universal Studios.
- Waldrop, M. M., Naramore, M., & Audible Studios. (2020, January 28). Complexity: The Emerging Science at the Edge of Order and Chaos. Audible Studios.
- 22. Harari, Y.N. (2018). Homo Deus: a brief history of tomorrow. Harper Perennial.
- 23. Goodale, J. (1983). in the shadow of man. Houghton Mifflin
- 24. Liu, X. (2009). The mirage of China: Anti-humanism, narcissism, and corporeality of the contemporary world (Vol. 5). Berghahn Books.
- 25. Brewer, S. (2021). Anti-Humanism and the Battle Against Ethical Universalism.
- Areo. Retrieved August 2022, from https://areomagazine.com/2021/01/28/anti-humanismand-the-battle-against-ethical-universalism/
- 27. William, G. (1993). Anthropocentrism and Deep Ecology. Australasian Journal of Philosophy 71 (4): 463–75.
- Fukuyama, F. (2017). Our Posthuman Future: Consequences of the Biotechnology Revolution. Profile Books.
- Hayles, K. N. (1999, February 15). How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics (1st ed.). University of Chicago Press.
- Cielemęcka, O., & Daigle, C. (2019). Posthuman Sustainability: An Ethos for our Anthropocenic Future. Theory, Culture & Society, 36(7–8), 67–87. https://doi.org/10.1177/0263276419873710
- 31. Pacini-Ketchabaw, V., and F. Nxumalo. (2017). Staying with the Trouble' in Child-insecteducator Common Worlds. Environmental Education Research.
- 32. DECKHA, M. (2013). Initiating a Non-Anthropocentric Jurisprudence: The Rule of Law and Animal Vulnerability Under a Property Paradigm. Alberta Law Review.
- Katie, S. (2016). Globalization and the Animal Turn: How International Trade Law Contributes to Global Norms of Animal Protection. Transnational Environmental Law 5: 55–79.
- O'Donnell, E. L., & Talbot-Jones, J. (2018). Creating legal rights for rivers: lessons from Australia, New Zealand, and India. Ecology and Society, 23(1). https://doi.org/10.5751/es-09854-230107
- 35. World People's Conference on Climate Change and the Rights of Mother Earth, https://pwccc.wordpress.com/
- European Patent Office. (1970, August 22). European Patent Office. All Rights Reserved. Retrieved September 1, 2022, from https://www.epo.org/law-practice/case-law-appeals/recent/t900019ep1.html+
- Atherton, L. E. (1949). Tennessee Valley Resources: Their Development and Use. By M. H. Satterfield and Others. Knoxville: Tennessee Valley Authority, 1947. Pp. 145. The Journal of Economic History, 9(1), 81–81. https://doi.org/10.1017/s0022050700090495
- 38. Tennessee Valley Auth. v. Hill, 437 U.S. 153 (1978).
- Murchison, K. M. (2007). The snail darter case: TVA versus the Endangered Species Act. Landmark Law Cases & American.
- Plater, Z. J. (1985). In the wake of the snail darter: an environmental law paradigm and its consequences. U. Mich. JL Reform, 19, 805.

- 41. Gutmann, A., & Thompson, D. (2004). Why Deliberative Democracy? Princeton University Press
- Shaffer, G., & Pabian, D. (2015). European Communities—Measures Prohibiting the Importation and Marketing of Seal Products. American Journal of International Law, 109(1), 154-161. doi:10.5305/amerjintelaw.109.1.0154
- 43. Radhakrishnan, S. (1994, October 12). The Principal Upanishads. HarperCollins.
- 44. Foucault, M. (1994, March 29). The Order of Things: An Archaeology of the Human Sciences (Illustrated). Vintage.

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