

ARTICLE

What Do Chimeras Think About?

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Abstract

Non-human animal chimeras, containing human neurological cells, have been created in the laboratory. Despite a great deal of debate, the status of such beings has not been resolved. Under normal definitions, such a being could either be unconventionally human or abnormally animal. Practical investigations in animal sentience, artificial intelligence, and now chimera research, suggest that such beings may be assumed to have no legal rights, so philosophy could provide a different answer. In this vein, therefore, we can ask: What would a chimera, if it could think, think about? Thinking is used to capture the phenomena of a novel, chimeric being perceiving its terrible predicament as no more than a laboratory experiment. The creation of a thinking chimera therefore forces us to reconsider our assumptions about what makes human beings (potentially) unique (and other sentient animals different), because, as such, a chimera's existence bridges our social and legal expectations about definitions of human and animal. Society has often evolved new social norms based on different kinds of (ir)rational contrivances; the imperative of non-contradiction, which is defended here, therefore requires a specific philosophical response to the rights of a thinking chimeric being.

Keywords: chimera; sentience; rational; human rights; animal rights

Introduction

There are many reasons given for human beings (*Homo sapiens*) having a unique moral worth that distinguishes the species from all other beings, creatures, and life forms. Some of these may fall into a category of human exceptionalism that sustains *respect for human persons* and permits persons to treat everything else as *things*.¹ I am interested in how respect (or justice) affirms personhood in culture, humanity, and society (I shall use these terms interchangeably when referring to their humanistic genesis), and in so doing, provides assumptive reasons for the instrumental use of nature. For example, personhood is conjured up by the essence of human dignity² or described in the signs all around us of intellectual achievements and spiritual imaginations.³ Philosophers have contributed to this duality, namely, by discerning human purposivity from natural automatism.⁴ Scientific approaches focus on the peculiarities of the human genome and functional biology (such as the capacity for language),⁵ or identifying characteristic mental states absent in non-human animals. Exceptionalism in social evolution focuses on the distinctiveness of human culture, despite its origins in animalism: humanity's endpoint is an atypical scale of ultrasociality, such that institutions of economies, ethics, and law cannot be found in nature.⁶ The law justifies a blanket concept of *legal persons* to focus its concern for human beings (here, I am not talking about any particular jurisdiction).⁷ These reasons can be found across a range of social institutions, which give rise to an empirical belief in humanities' unique capacities and singular achievements, that "The human animal is the only 'animal' with an intellect empowered to deal with the unper-ceived [*sic*], the imperceptible and the unimaginable."⁸ Respect for persons, therefore, may be

expressed as *human* rights—rights bestowed on beings equally because they are “human” in the ways we expect them to be made and behave. The fundamental purpose of these rights (as opposed to animal welfare) is to impose side constraints on pursuing the greatest or common good against the interests of individuals.

One consequence of the duality of culture and nature can be seen in the conduct of invasive scientific research: Whilst most human beings are precluded from being subjects of non-consensual research, non-human animals are routinely used to further our collective ends. But can human exceptionalism be sustained as an egalitarian conception of rights? In this respect, human exceptionalism dominates all other animals’ interests; in particular, we live with (non-human) animals, and we use and often rely on them in both mutual and exploitative ways; our population growth, land use, habitation, and industries impact on the environments we share with them. So, institutions like law and the legislature must recognize society has many responsibilities towards animal welfare and environmental sustainability. This can lead to specific conventions to protect the interests of non-human beings, but, as such, they may not extend rights to them as either natural⁹ or legal persons.¹⁰

There are biological, genetic, neurological, physiological, and social differences between all species. But, so far, scientific methods have yet to prove any benchmark moral properties that are *distinctly* human (some humans lack corresponding capacities) or that are *entirely absent* in animals.¹¹ Theories of mind have yet to conclusively show that humans are singularly conscious beings, or uniquely communicative, or that all other animals are minimally or less-than conscious. Animals have cultures, too. And human ultrasociality, although (only perhaps) unique in scale, does not explain autonomy’s intractable dependency on nature.¹² Personhood, therefore, is a concept embroiled in tricky is-ought controversies that may be leveraged to bring about evidence-based social change in respect to the similarities (and differences) that define policy. In this respect, we can look at the prospective remedies (e.g., court judgments) through the lens of “the starting point” for moral considerability.¹³ For instance, some egalitarian arguments claim that moral worth is independent of social structures, and emerging scientific data allude to the significant ethical connections between *all* life. Taken as the starting point, these connections contradict the presumptions made about humanistic sociality and suggest there is critical unfairness in human exceptionalism (and that imperils all life on this planet).¹⁴ As such, an egalitarian origin leads to conclusions starkly contrasting to those found in the views, mentioned above, that suggest that other (non-human) beings always matter less-than human beings.¹⁵

I can explore these conclusions from the perspective of an *ethical rationalist*—a type of egalitarian—who is compelled to speak positively of the rights of an ostensibly “thinking” chimeric being: a non-human animal experimentally transformed with a human brain. While the exceptionalist would likely hold this as an impossibility (an animal cannot cross over into human personhood),¹⁶ for the ethical rationalist, personhood is a *plausible outcome* of transferring neurological properties. (This is only a strong claim to the extent that thinking is not unique to human beings.) An ethical rationalist argues that reason alone can establish the rights of, and duties to, other agential beings¹⁷; and prospectively, we do not have the same duties towards non-agents (although we may have other obligations).¹⁸ In this regard, the social effects of dehumanization (regardless of a being’s humanity) are loss of freedom and well-being, to the extent that rights are claims made to develop a personalist morality of the good life. A thinking chimera, like all of us, is entitled to a beneficent world that is conducive for the development of capacities leading to an existence well-lived.¹⁹ Thus, the chimera’s existence questions the humanistic approach to positive *human rights* against the concept of *natural moral rights*.

The present paper is not the first attempt to decipher the implications of chimera research in respect to the rights of non-human animals: like others, I argue that the problem is essentially “humanness ‘at the starting point’ in this way referring to the problem of biological-psychological features distinguishing a human being from non-human entities.”²⁰ I propose that a new starting point—the prospect of and capacity for “thinking”—has ramifications for institutions that have traditionally found humans and other beings to have unequal moral status as subjects of rights. This paper uses a *legal* (or jurisprudential) lens to define these institutions, because those like courts define “the law” *qua* policy every day. However, the function of law (or, more precisely, the rule of law) forms part of the whole of society, including its social, regulatory, professional, and political institutions, that is defined by policy.²¹ So, this paper is an

attempt to trigger changes “in law” that have far wider implications than the individual court cases mentioned later; that is, here I define the contradictions in specific legal settings, but emphasize that they are found across all of society. As we shall see, despite many arguments made over the years,²² contradictions persist across a range of legal treatments of the human/animal concept, and the prospect of shifting them has recently been set back by more exceptionalism in the courts.²³

The following provides an ethical rationalist’s solution to the paper’s title; specifically, if a particular kind of human-animal chimera could think, we *would know* what it “thought about” through introspection about what all agents value: their rights. My criticism focuses on the legal rejection of non-human personhood, therefore, by evoking the possibility that emerging “humanization”—a bundle of factors that allude to mental capacities is an interspecific phenomenon. This demands a philosophical approach to understand the implications for chimeras as they bear upon the ethical treatment of any prospective “humanized” being brought into existence purely for research purposes. I proceed as follows. The next section explains my methodology. In the third section, I discuss why (and how) a neurological human/non-human chimera might be created. Such experiments are often justified because models of human brains allow for probing and dissections that are ethically and legally precluded in human beings.²⁴ In the fourth section, I suggest that anthropogenic bias might explain society’s prosocial reasons to avoid protecting prospective chimeric beings: namely, affirming the correlativity of human rights and social progress against the utility of animal research. In the fifth and final section, I use the idea of thinking as an elementary benchmark to engage in three enquiries to expose the pitfalls of exceptionalist theorizing. In conclusion, I surmise that ethical rationalism refutes the tendencies of our present right-based institutions to make impartial pronouncements about the interests of non-human beings. Although this paper cannot address the regulatory outcomes of the argument, it should be easy to see that it is also a critique of our instrumental treatment of all non-human animals: the chimera, framed in title of this paper, is a graphic case to question human exceptionalism as the basis for moral and therefore legal rights.²⁵

Methodology

This paper follows on from another that I wrote, asking *can* a neuronal chimera think?²⁶ There, I concluded that, unless one presupposes that *only* humans have moral status (in ways that have just been alluded to), then it is plausible that other beings, including chimeras, may (because they can) have comparable moral status. In a purely logical form, therefore, *all* thinking beings (which is only knowable from an internal perspective) have moral status regardless of *any other externally knowable factor*. Such knowledge is not dependent on their *humanity*, because humanity (whatever that is) is not logically sufficient for introspection; the present paper is an opportunity to refine the concept of “thinking.”²⁷ We can now ask what would a chimeric animal, transformed with a human-like brain, think *about its* predicament? That cannot be easily answered in terms of science (as a concept of discovery), or the beliefs and values we hold about such things. But it is a logical truth that, if such a being *exists*, then it would present a unique problem for contemporary sociality. We can assume that under the present normativity of law (inferred by a selection of legal cases, see section below “Why is the Status of a Human-Animal Chimera a Hard Problem?”), it could be confined to a laboratory and subject to all manner of experiments.²⁸ But, if, instead, we were morally compelled to respect the being’s rights, then regardless of customary structures, we could not—ethically speaking—continue with the research that it was created for. But, as I will show, we can go much further than just saying that such an organism might “happen” to contemplate their position in relation to human rights. If rational personhood matters—as the ethical rationalist would maintain—then such a being is categorically and immorally denied its rights in a world in which it cannot have *human* rights.

There has been plenty of discussion about the reasons to create chimeras, and the specific capacities we would expect to arise in chimeras of different kinds. These contextual arguments include suppositions from the most general, for example, “Is it ethical to use chimeras in research?” to the specific kind like “Should chimeras be used as organ donors?”²⁹ The answers partly depend on the conditions established

by the process used for argumentation, which includes the justifications made from various background societal views and comprehensive moral doctrines. These are useful debates as long as such social assumptions are made known.³⁰ Ethical propositions in chimera research, therefore, often piece together different observations about animals, chimeras, and humans in such a way as to create a single reasonable policy.³¹ Some of these observations use uncertainty and unlikelihood as the best reasons to maintain respect towards human beings, and so are overtly anthropocentric.³² This paper uses philosophical exactitude to challenge such outlooks on a key premise: A version of the law of non-contradiction states that a proposition that something that has a property (A) cannot be something else (property B). Usefully, this principle can be expressed through the pitfalls of self-contradiction. Such contradiction—as we shall see in section “The Pain of Self-Contradiction”—can be used to leverage legal standing (as one example where a “fuzzy set” leads to legal ambiguity),³³ when we don’t know whether something is A or B (and we don’t have a socio-legal system to deal with C). If we can assume that “thinking” chimeras are plausible, that raises a special case for legal standing under ethical rationalism (conventionally, such a being may be either A or B), which forces us to address the reasons given in influential legal cases, to understand *what we expect human rights to do (and understand what they can’t do)*.

Thus, this paper follows in the wake of perhaps one of the most telling legal judgments in the Twenty-First Century about animal legal status: although there are seeds in jurisprudential reasoning recognizing (at least some) animals as having “natural liberty,” non-human beings cannot be included within the legal structures that bestow unto human beings’ *liberty* rights (see majority judgment in *Nonhuman Rights Project v. Breheny*).³⁴ In this case, heard at the Court of Appeals of New York in the United States, the concern was for the rights of an elephant called *Happy (Elephas maximus)* confined in a zoo. The Court decided that:

Because the writ of *habeas corpus* is intended to protect the liberty right of human beings to be free of unlawful confinement, it has no applicability to Happy, a nonhuman animal who is not a “person” subjected to illegal detention.³⁵

What we can say (in a general sense) is that Happy remains an object of respect but not a holder of human rights because logically they are not *human*. Rights have a specific purpose which—by denying them to Happy—allows their capture and confinement (and parallels the background societal views that justify animal research, see section “Why is the Status of a Human-Animal Chimera a Hard Problem?”). To my mind, it seems unfair to bestow on Happy the qualities of liberty and dignity, but only in a form that corresponds to the anthropocentric bias of our institutions. Is there, therefore, another way to challenge this court’s argument?

Chimera experiments are moral conundrums because some prospective outcomes will be an extant being *more like us*. To explain what this means, I use a thought experiment, common in philosophical and jurisprudential methods, to imagine a chimeric being engineered such that its brain is derived wholly from human pluripotent stem cells.³⁶ The experiment is inspired by the novella *The Metamorphosis* by Franz Kafka, to explore the premise that a thinking chimera is harmed as a research subject (just as Gregor Samsa is harmed because no one knows what he is).³⁷ This literary analysis is not a mere detour, because there is little substantive evidence in which animal cognition *has* been shown to be altered in ways that create human-like states (although there are tentative observations),³⁸ and the descriptive elements of *The Metamorphosis* provide a way to understand “thinkingness.” Like Gregor, a *thinking* chimera’s personhood is grounded in their self-awareness of a predicament that leads to their eventual demise in the hands of others: it necessarily thinks that *s/he/they* are, or it is, someone, rather than (impossibly, *if it thinks*) *some-thing*.

I do not claim that story makes any claims that such beings exist or will do in the future. To my knowledge, such a human-brain chimera has not been created; but scientists are active with experiments likely to achieve this goal (see section “Why Create a Thinking Human/Non-Human Chimera?”). If they are successful, then a scientific approach could not tell if such a being *would be more like us in the ways that human exceptionalists view differences between legal persons and things*.³⁹ So, we are compelled to

explore the ramifications of a plausible if radical illustration as a specific challenge to human exceptionalism.⁴⁰

Next, let me say something about the word *thinking*. The question posed in the title might suggest a straightforward answer in that non-human animals do, or do not, think already. Crucially, as we navigate through this paper, reasons will be given as to why the premise may be stated strongly that at least some non-human animals have the capacity to (ostensibly) think. However, the presumption that an unknowable chimera could “think” may be too fantastic for some readers, so we must first engage in a purely logical exercise of considering the possibility, because regardless of what *we* think it is, such a chimera would enter *this world as it is*: and if it could think, it would contemplate its dire prospects as a creature with no human rights.⁴¹ This possibility requires examination from basic principles; that is, without necessarily knowing what *is* a “thinking chimera”, there appears to be a contradiction between the nature of being and human exceptionalism (the etymology of being originates from “the fact of existing”).

The question in the title really means, does an animal, artificial intelligence (AI), or chimera have rights? An answer is perhaps deduced from the “knowable” conceptualization developed by Alan Turing:

I propose to consider the question, “Can machines think?” This should begin with definitions of the meaning of the terms “machine” and “think.”⁴²

Turing used an abstract description of a machine (computer or robot) to solve a question about “what would happen...?” and, as such, I similarly define a *human-animal neuronal chimera* as an abstract, noumenal being that “thinks.” The most plausible example is experimentally transforming a (non-human) primate to have an identical brain to a human (primate), and analyzing not just what *has* happened, but rather, what would the ethical implications be *if we did it*? Turing’s point has not been answered by his proposed Test, yet, but that does not stop us from considering the real possibility of artificial *intelligence*.

Like Turing, also, I do not propose to define *thinking* as proof of specific biological mental phenomena:

This is fine [for Turing], for thinking (cognition, intelligence) cannot be defined in advance of knowing how thinking systems do it, and we don’t yet know how. But we do know that we thinkers do it, whatever it is, when we think; and we know when we are doing it (by introspection). So, thinking, a form of consciousness, is already ostensibly defined, by just pointing to that experience we all have and know.⁴³

Charlie Dunbar Broad, in *The Mind and Its Place in Nature* (1925) “...argued, we have to see a case before we can explain it ...One cannot know ahead of time the kinds of entities, processes, and functionalities that will come to exist.”⁴⁴ It was suggested that he meant some phenomena like consciousness had “a mysterious quality of absolute unexplainability.”⁴⁵ Yet Broad originally wrote, “Within the physical realm it always remains logically possible that the appearance of emergent laws is due to our imperfect knowledge of microscopic structure or to our mathematical incompetence.”⁴⁶ This perhaps foretells of the formidable challenge of deciphering whether a particular chimera “thinks.”

Thinking is a puzzle, therefore, since if we don’t know what is causal for mental states, then is it possible for us even to ask whether a thinking chimera would have rights? Perhaps that is a question of the subjective character of experience that can be asked of a bat,⁴⁷ robot,⁴⁸ or human being,⁴⁹ but that raises the problems of mind reading that already befall consciousness studies in respect to limitations of observation and communication. The chimera problem often involves conjecture about biology, genetics, or physiology; these approaches will unlikely lead to solutions either, because although necessary, there is nothing sufficient about these characteristics between and within species that proves personhood.⁵⁰ Animal scientists use analogy (in areas like ethology) to investigate the possibility of non-human minds, but they, too, are yet to ascertain a standard meaning of moral standing.⁵¹ But most of all, such a being is not *known* to exist yet, so we cannot *know* what it thinks.

So, rather than using any single descriptive sense of personhood, such as dignity or referring directly to the evidence for mental states (which may or may not be the properties of a chimera), I use “thinking” as a useful philosophical concept to describe a logical phenomenon: if a being thinks, then it *is* an agent, and by that virtue alone, it has rights (see section “Three Rational Enquiries About Sociality”). Methodologically, this means that an agent thinks about its freedom and well-being (which, as will be explained, is what all agents value as the basis of their rights), but not that any being thinks about these *the same way*. (Humans do not think about their freedom and well-being as the same, but each of us knows we have—or should have—freedom and well-being.) Although this dialectical approach raises questions about the boundaries of personhood,⁵² self-understanding is a significant anchor for the present enquiry: *Agency contradicts the exceptionalist construction of human rights because it cannot sufficiently preclude the possibility of rights for artificial, non-evolved, or non-human species.*

Why Create a Thinking Human/Non-Human Chimera?

A *chimera* is a biological being that contains two or more distinct genomes; that is, it is a mosaic of different species that can be genetically detected in its cells, tissues, or organs. A *hybrid* is a mixture of species, where the combination is often at the genomic level, for example, a mule is a cross between two species of equine (*Equus caballus* and *Equus asinus*). These terms are often conflated (e.g., combining the genetic material of two or more viruses—often called “chimeric viruses”—are more like hybrid microorganisms), giving rise to terms such as “admixed” beings. Chimera is a common term, however, and I will stick with using that. Chimeras spontaneously occur when zygotes fuse, so that the different genomes are distributed in the tissues and organs of the developing organism. At some point, Neanderthals mixed with modern human ancestors (*Homo neanderthalensis* and *Homo sapiens*). And human transplant patients live with organs from a human donor. Chimerism, therefore, is not itself unusual.

In 2022, a genetically modified porcine heart was transplanted into a human patient.⁵³ For some years prior, animal-derived heart valves have been implanted in patients creating *interspecific* chimeras. Non-human primate embryos have been created containing dispersed human cells and tissues (without being implanted to develop to maturity).⁵⁴ In these cases, routine and experimental xenotransplantation raises issues of animal research, gene editing, and cross-species susceptibilities to pathogens.⁵⁵ There are welfare issues with respect to how engineered animals are kept in controlled, sterile, and unnatural conditions.⁵⁶ Animals could benefit from inter- and extra-species transplantation, such as a donation system to treat companion animals under veterinary care.

Brain damage and degeneration are significant afflictions of humanity.⁵⁷ To study brain development and neurological diseases, some time ago, an experiment was proposed to engineer a mouse (family *Muridae*) that overtime would develop a brain repopulated with human stem cells, programmed (or induced) to become neurons and associated cells.⁵⁸ At the time, it was surmised that a “...mouse brain made up entirely of human neurons would still be a mouse brain, in size and architecture, and thus could not have human attributes, including consciousness.”⁵⁹ The animal model would be something *like* a human brain for the purposes of invasive research, but it would be impossible for the mouse to be “humanized.”⁶⁰ That experiment was never done. Sometime in 2021, it was reported that “human organoids”—complex 3D neuronal tissues resembling functional brains—were implanted into juvenile rats (genus *Rattus*). These chimeras matured with functional brains, but moreover, the xenografts were shown to influence basic host behavior.⁶¹ The experiment proved that human neural progenitor cells could establish neural connections between human and host cells while maintaining human-specific features.

If the purpose of these mouse and rat experiments were to create a close likeness to human neurology, then non-human primates might provide the “best available animal models for many diseases and normal biological functions, especially when it comes to the brain.”⁶² Recently, researchers created human transgenic non-human primates (from the family *Callitrichidae*) that developed abnormally (for that species) large neocortices.⁶³

In this matter, I am not considering the prior mental states of non-human primates.⁶⁴ But instead ask: Would a chimeric animal—perhaps a chimpanzee (*Pan troglodytes*) as the “ideal” research subject in this regard—become humanized?⁶⁵ That term can be used to define a research organism that is significantly like us for the purposes of study, and a living being enough like us to have personhood. Contrary to expected scientific benefits of such an animal model, chimpanzees (and other great apes) are rarely used for invasive research and doing so is prohibited in some jurisdictions. It is increasingly considered to be *immoral*, rather than merely a welfare issue, to conduct such research on non-human great apes. Some “...believe that these bans could inaugurate a broader trend towards greater restrictions on the use of primates and other animals in research.”⁶⁶ Law may preclude such immediate risks, such as banning “Human biomedical research involving the introduction of human stem cells (including induced pluripotent stem cells) or human neural cells into the brain of living great apes whether prenatal or postnatal.”⁶⁷ Chimpanzees are our closest relatives, and share similar (i.e., not identical) morphology, comparative evolutionary complexity of brain structures (with behavioral, [pro]social, and cultural similarities), and experimental neuronal plasticity.⁶⁸ But they, like all other non-human primates are, in most jurisdictions, precluded from legal rights protections.

The impossibility of humanization, therefore, needs to account for a situated “human” brain maturing into a plausibly functional state in such a similar relative: that is, the experiment could be done, and could result in highly problematic outcomes. Is humanization plausible? Cross-species chimerism suggest that there are no genetic or biological barriers to interspecific cell, tissue, or organ functionality.⁶⁹ In this respect, it seems at least plausible that if the *Res cogitans*—the “thinking stuff”—emerges ultimately from within neurobiological and biochemical substances, then its organic functions are transferable, too. Conceptual proof of concept might be the transplantation of an entire human (or other species) brain *pro tanto* into an unrelated species (or artificial support system), and the resulting transplant confirming the same function and qualities as before (a simple analogy for any transplantation). However, stem cell approaches, described in the mouse and rat experiments, above, avoid the acumen and surgical skill of a direct head or brain transplant. As such, this is not about the relocation of a functional brain organ, but rather a being *developing* a morally relevant state. Stem cell pluripotency does the work of organically attaching functional neural networks to sensors and effectors. And the model (if gestated and born healthy) will go through stages of development (in human terms: infancy, childhood, and adulthood), including a natural teleology, which could include mature states of thinking. It may develop the capabilities, dispositions, strengths, and weaknesses of a natural person; and it could eventually have a modicum of experiences like “like ours.” It may not, however, “think” that it is human or necessarily develop species-normal features or capacities.

Would selective changes be enough to traverse what some might suppose are the astronomical magnitudes of difference between our species, or ultimately cross a point in graduation where they become “human” enough?⁷⁰ This premise raises several anomalies: for example, could a rhesus macaque (*Macaca mulatta*)—commonly used in research—be transformed to think like a chimpanzee through neurological manipulation; or would a human with a chimpanzee brain “think” like a chimpanzee?⁷¹ As such, it is difficult to explain in normative terms the interspecies transformation without reference to the species-typical brain functioning of each contributing part. This is a version of what David Chalmers called the “Hard Problem of Consciousness.”⁷² However, in these cases, we are imagining a human brain organ successfully integrating with the animals’ bio-physiology to create something *unique*, which potentially supercharges the “hard problem.” We need to establish whether we are still talking about a “mouse,” “rat,” or a “monkey” in the light of social descriptions of rights.⁷³

Why Is the Status of a Human-Animal Chimera a Hard Problem?

A hard problem is a philosophical question worth solving prior to it practically happening. In this case, is it plausible that the transformation of an animal’s brain with human cells would meet the moral conditions for personhood? In AI research, for example, it has been argued that a computer, indistinguishable through interactions with human “inquisitors” in relevant respects, would be “conscious.”⁷⁴

The Turing Test allows us to speculate about the conditions for present institutions to allow an AI to assert its legal rights on account of its communication (implying consciousness), rather than a function of biology, genetics, or species.⁷⁵ That begs the question as to what “relevant” and “indistinguishable” mean. For example, human beings are also sentient animals and are identical to (non-human) animals in at least that respect, so all sentient species might be consequently classified as having an equal status *in respect to some moral factor* (which, as a principle of universalization, does not mean that everyone has the same moral needs). According to the human exceptionalist, sentience is not sufficient for *human* rights.

Legalize approaches to justify categorical human rights may recall the “notion of human dignity and human equality,” but they often do not tell us why it is only humans who perceive of such values, so implicitly the concept of species provides necessary *and* sufficient grounds.⁷⁶ Moreover, since no other animal has developed sophisticated capacities for economics, ethics, and law, such things as rights might be assumed to be redundant in nature.⁷⁷ The human exceptionalist conceives of rights for “everyone” *qua* every human being, and aspires to institutionalize them as necessary cultural artifacts. That suggests that human rights (as a construct) are ostensibly self-explanatory, because humans are self-evidently exceptional.

There is a supposed upshot of that reasoning: Utilitarianism is a comprehensive moral doctrine with wide ranging social impacts. One of these concerns the principle of impartial benevolence, so that, once embedded in various social institutions, society becomes predisposed to the greater good of human exceptionalism.⁷⁸ Therefore, framing such consequences as conditionally good justifies using animals (non-rights holders) to benefit the rights of existing and future persons (rights holders).

For animal research that causes sentient nonhuman animal suffering to be justifiable, I believe that two conditions must be met. First, harming animals for human benefit must be morally justified; this is the speciesism justification. Second, animal research must have utility—that is, it must produce useful, empirically valid knowledge that successfully increases our understanding of human illness and treatments and that could not reasonably be obtained through other means; this is the utility justification.⁷⁹

Speciesism is not merely plausible; it is essential for right conduct, because those who will not make the morally relevant distinctions among species are almost certain, in consequence, to misapprehend their true obligations....⁸⁰

This difference in moral status implies not only unequal consideration of interests, but more importantly that animal welfare and interests cannot give rise to limits based on rights or dignity that trump utilitarian considerations of harms and benefits, as is the case in human research ethics.⁸¹

Ye are of more value than many sparrows.⁸²

These examples of argumentation support the belief that invasive scientific research on animals always leads to comparative and worthwhile benefits.⁸³ It allows chimera experiments to be normalized (as a pragmatic utilitarian might claim) because they generally contribute to social progress. (*viz.*, the world we live in now is only possible because of sacrifices made by animals for the advancement of medicine and technology). The primate chimera experiment is “only justifiable if there is a realistic chance that the research will lead to treatments that will reduce human suffering and save lives on such a scale that the increased animal suffering is a morally acceptable trade-off.”⁸⁴ But, of course, the acceptable trade-off is a judgment made from within a system that is necessarily grounded in anthropogenic economic, scientific, political factors.

But consider what the title of this paper implies: What would a chimeric human-monkey think about this predicament? In a “court of law,” an arbiter or judge might have to decide whether such a novel being’s claims are subject to human rights protections. For illustrative purposes, this can be reasoned

through using select legal cases (although I am jumping from one jurisdiction to another, the general point should be grasped). In the England and Wales Court of Appeal case of *A (Children)*, Lord Justice Ward (citing the Supreme Court of the United States of America) wrote:

This court is a court of law, not of morals, and our task has been to find, and our duty is then to apply the relevant principles of law to the situation before us—a situation which is quite unique.⁸⁵

The situation concerned human conjoined twins. In the majority judgment, the Court could only say that their separation was necessary, despite the consequence of causing Mary's death, because it would save the life of Jodie. The separation went ahead. In the eyes of the Court, both twins were human beings and therefore equal in human dignity. It was inconsequential whether they had any mental capacities (which, as neonates, would not be different from some sentient animals). In general, however, as explained in the *Vo v. France* (European Court of Rights), there is little consensus on the scientific or legal definition of the beginning of human life, and that creates uncertainty to the concept of legal person.⁸⁶ So, while research of high utility may be possible using viable human embryos,⁸⁷ the same justification (in the absence of informed consent) has been persuasively resisted to protect born persons.⁸⁸ Regardless, there is, perhaps, an overarching spirit of obligation to protect the dignity and identity of all human beings, and the "interests and welfare of the human being shall prevail over the sole interest of society or science."⁸⁹

In a more recent case from the United States, concerning the rights of Happy the elephant, the majority judgment explains that rights are only applicable to *legal persons*, while animals are subject to (in the consideration of the court, *sufficient*) laws protecting their welfare interests. Neither of these constructs, however, are self-explanatory.⁹⁰ And in this regard, all three aforementioned judgments are clearly moral: They are "major issues of political philosophy with significant ramifications for the lives of many people"⁹¹; and, as Deryck Beyleveld and Roger Brownsword argue, morality necessarily impinges on legality.⁹² The judgments therefore exemplify a general desire to reaffirm ethical doctrines, such as the sanctity of (human) life and human dignity. Yet, without admitting to even a hint of contradiction, in *Breheny*, the majority states "the law clearly imposes a duty on humans to treat nonhuman animals with dignity and respect," but then proceeds to restrict the right to "liberty."⁹³ These judgments, therefore, might just be explained through the sequential application of laws of convention and tradition, rather than practical rationality.⁹⁴ So, despite inconsistencies, pointed out, for example, by advocates of animal rights, legal decision-makers are compelled to protect conventions against the "enormous destabilizing impacts" and "perilous implications" of giving animals equal status.⁹⁵ The greater concern is "...risking the disruption of property rights, the agricultural industry (among others), and medical research efforts."⁹⁶

So, interpreting these three cases through the lens of human exceptionalism, therefore, renders considerations of non-human mental capacities, (pro)sociality, or culture, inconsequential and therefore inadmissible factors. We know that some animals "think" comparatively well and live in communities with social structures, learning, and histories; and companion animals experience family and friendship; and wild animals have a subjective or phenomenological experience of liberty. These contradictions are hidden in appeals to human dignity and affirmed through anthropocentric bias.

In *A (Children)*, Lord Justice Brooke (in a minority judgment) alluded to another fact:

There is, indeed some kind of legal argument that a "monster" is not protected even under the existing law. This argument depends upon the very old legal writers, because the matter has not been considered in any modern work or in any court judgment.⁹⁷

Where there is uncertainty in the law (such as the passing of time reveals problematic historical reasoning kept alive despite common law contradictions), then *sui generis* theory may fill the gaps (which judges, or indeed, politicians, may pay head to).⁹⁸ Theory like this is conceptual and experimental, such that many methods might resolve questions of, for example, dignity, personhood, sanctity of life, and so forth. In this paper, the question posed might be resolved by finding out about a novel being's animality,

humanity, or “monstrosity”; but such terms cannot be *just* legalized or *only* described from within the prosocial reasons society has already created; they must be *explained*. Judges, in this respect, might again pass the buck, because they are constrained by institutional purposes that determine such changes must come from higher up (directed by mechanisms within the legislature). That means that economic, legal, and social institutions, as well as politics, will frustrate progressive opportunities to recognize the rights of non-human species. The illustrative case of a thinking chimera, therefore, is an opportunity to develop a point of view—or “court of morals”—so that these institutions might be inspired to lead change.

Three Rational Enquiries About Sociality

This section, due to space, only provides a modest test for the ethical veracity of instances of legislation that exclusively protect human beings as “legal persons” (as alluded to in section “Why is the Status of a Human-Animal Chimera a Hard Problem?”). The point is not to question the scope of human rights to conditionally protect human beings, but whether moral and therefore legal rights protections should be extended to (non-human) others. I use a form of ethical rationalism that combines rational enquiry with reflexive interpretation, to challenge the specificity given to (*human*) rights by theories of human exceptionalism. The theory is presented as an applied argument rather than a survey of philosophical ideas, so as to foreground a socio-legal view that there is a rational explanation for human rights.⁹⁹

Franz Kafka’s *The Metamorphosis* is an analogy illustrative of “moral confusion”¹⁰⁰; but is a unique version, where misunderstanding a predicament is likely, because it is so unusual and disorientating that, for the most part, it is unknowable. There is no indication that the monstrous, insectoid Gregor Samsa is a chimera created by scientists (it is probably the work of the supernatural). Regardless, he is what he is, right now, as we find him. We can use Gregor’s predicament to track across three enquiries: first, his self-realization, second, the realization that society must respond to his unique circumstance, and third, his justified trepidation about the soundness of ethical judgments made about his interests.

“When Gregor Samsa Awoke One Morning from Troubled Dreams, He Found Himself Transformed Right There in His Bed into Some Sort of Monstrous Insect.”¹⁰¹

The first enquiry is illustrated by the plight of Gregor Samsa as told from *his* perspective: his mind (“He must go”),¹⁰² finds itself within an unrecognizable body (“We must try to get rid of *it*...”) ¹⁰³ (my emphasis). The story has an important premise: the protagonist had a past and has a future, but he is in the present because he knows *who* he is. Gregor has not metamorphosized into a merely sentient creature; the horror is *his* realization that his appearance is that of a “monster.” Hearing his tale is our privilege; his plight is not shared with his family or community: “The words he uttered were no longer understandable...”¹⁰⁴ due to “the lack of all direct human speech.”¹⁰⁵ The narrative is a way to understand a thinking chimera’s predicament (Gregor is, seemingly by definition, a chimera).

But we can also turn the narrative (which is understandable as a literary *triste* about humanity), into a philosophical dialectic. That is, the story can be explained in its use of a universal point of agency: just as Gregor thinks about his predicament (i.e., he tells *the* story), then any agent as such, thinks.

“I think.”

This statement is proof, in and of itself, that “I am an agent.” “I” refers to any agent and is not sufficiently explainable in terms of biological, neurological, evolutionary, social, or species factors; such properties may be necessary, but they are not sufficient. [In the following, whenever I use “I,” “my,” or “mine,” I am using the dialectic tool to refer to *any* thinking being.] Unlike beliefful, valuative, or descriptive starting points, agency (as such) can be explained as a result of the dialectical method—a conversation with oneself, conducted in such a way that “another” can “hear” and comprehend the logical connections made. This conversation provides a complex theory of what a particular being *is* by understanding what “*I am*,” and thereby an “onlooker” may ascertain that thinking and rights are necessarily *and sufficiently* connected.¹⁰⁶

Agential thinking (or what an agent thinks about), put simply, is what an agent *dialectically* claims by virtue of what they know about themselves. I live in my brain, so I have the advantage of knowing, in

advance, from the inside, what a portion of the brain is up to, and I can tell the reader about that. It may go something like this¹⁰⁷:

At this moment, I pause and look at the room and think about the world around me. Thinking is what I am doing now as evidenced by writing this paper. In so doing, I am certain that I am a conscious being. I don't *know*, or need to know what is causal to my consciousness, for this to be true.

Accordingly, the notion of an abstracted agent can be transformed into a moral regard for the material rights of others, because thinking is universalizable to any *concrete or ostensible* agent: that is, the claim that an agent thinks of themselves *as an agent* is necessary and sufficient for *any* agent to claim *they are an agent*. If this explanation were untrue, then there would be no stories to tell because there would be no one to speak of them, no one to hear, and no one to *understand*.

Next, I reflect on my social context: I can think about how much I value things that contribute to achieving my purposes in my life—and recognize that torture and cruelty are things I would very much like to avoid. The difference between these states, I think, “is that what justifies for every agent his having rights is that he is a prospective agent who has purposes he wants to fulfill.”¹⁰⁸ But it is not just these awful things that can frustrate my purposes; thinking, for me, is an effected state: it is characterized by happiness, satisfaction, anxiety, confusion, and fear. The difference between these states are their relative contributions to my freedom and well-being. To be without freedom and well-being is to be denied *my rights*.

I think that my brain is where I experience this sense of purpose, as long as my capacities for “sensing, conceptualizing, imagining, desiring, feeling, valuing, believing, reasoning, and understanding, and possessing needs (physical, psychological, social)” remain reasonably stable and constant.¹⁰⁹ My environment provides such goods as are necessary for my needs; I have rights to these basic goods. I welcome that my community values me by providing them; I might protest if they were withheld. While this supposes that goods are *necessary* for *my agency*, they are also *sufficient* in terms of the *rights I have*: the circumstances I can imagine (thinking about the plight of Gregor), perhaps though I might endure (considering their effects on “me,” not necessarily on the tangible substrate of my body), would be harms to my freedom and well-being.

I am reassured that “I” can be explained by neurology and science (rather than a spiritual force), and I suspect that beings “like me” also think because of a similar neurological composition: I assume that the persons I meet day-to-day are thinkers rather than automatons or zombies. If I respect these persons, then I act in accord with, and therefore respect *their* rights.¹¹⁰

Now, I can momentarily adjust my thoughts to consider whether a chimera *of some sort* may have kinds of perceptual and rational capacities like “mine.” I suppose I know about unconscious states, too: I emerged from a developmental stage that lacked but had potential for consciousness (but I do not remember crossing that Rubicon); and then I go to sleep, and sometimes awake from a vivid dream; sometimes I find myself in states of meditation, illness, or tipsiness; and sometimes I hallucinate (because of illness, tiredness, or drugs). These states, I speculate, will eventually be explained (how, e.g., brain damage affects one's consciousness). I know that changes to my brain—biologically, chemically, or mechanically—change my capacity to think. I experience functional impairment caused by toxicants, disease, or trauma, and my computational skills can be enhanced or augmented. Physiological and biochemical changes to my consciousness are plausible.

Finally, I am compelled to conclude that if a chimera thinks, then it thinks the same things about its own purposes and needs as (generic) goods, and rights claims it makes to them. I do not need to

know such a being to think that; I do not need to know its specific beliefs or desires; yet I do have to take the possibility of agency seriously enough to form practical rules about other beings and their rights.¹¹¹

Therefore, there are reasons for resisting confinement, fearing torture, and perceiving an untimely death; *things that a chimera, like Gregor, if it could think, would think about*. I am reassured that the law sees me as a legal person; I think that a just idea of law sees me (as a citizen among others) as someone with both shared and distinguishable needs, rights, and duties. I think about the fact that this is not the same experience for many groups, and that the law and society continues to oppress persons throughout the world.

As a psychological approach, this entire dialectic follows logical rules: principles that are proof of my agential personhood; the principle of the necessary and sufficiency of agency to provide grounds for generic rights; and the principle of universalisation that requires me to act in accordance with the rights of all agents. In this respect, although humanism may be necessary, it is not sufficient for agency and rights: only forms of egalitarianism require that (in the final analysis) “I” must not use another person as a means to my ends without accepting such a situation on myself (see below).

I conclude that I am both a human being (with human needs) and a thinking being (with cognitive needs). I can participate in research by my own will—or consent—and that must be the same condition for all persons. I also suppose, that is, that *if* a chimera thinks, it should not be used in invasive research, despite the prospective benefits to me; otherwise, I must accept that the same can befall me.

*“What in the World Has Happened to Me?” He [Gregor] Thought.*¹¹²

The dialectical method allows for a second enquiry: to consider the idea of *social dehumanization*. In this respect, though Gregor *knows* who he is and that a horrible and inexplicable misfortune has befallen him, *no one else recognizes him; they only see a monster*. The causes of dehumanization (or being denied dignity) are many; so, I only have in mind to use utilitarianism as a common (and flawed) societal justification to practically override a person’s freedom and well-being (see “Why is the Status of a Human-Animal Chimera a Hard Problem?”).

About *The Metamorphosis*, David Cronenberg writes:

The source of the transformations is the same, I argue [referring to his old age]: we have both awakened to a forced awareness of what we really are, and that awareness is profound and irreversible; in each case, the delusion soon proves to be a new, mandatory reality, and life does not continue as it did.¹¹³

Cronenberg retains his rights in a society in which age does not (normally) diminish his legal personhood. Gregor, from the perspective of his *now* abject and alien state, would be like emerging into a world that is truly cruel, where he now has no moral status, and his rights are taken away. Cronenberg continues: “It never occurs to them [Gregor’s family] that, for example, a giant beetle has eaten Gregor; they do not have the imagination, and he very quickly becomes not much more than a housekeeping problem.”¹¹⁴ The same transformation condemns the chimeric animal to a laboratory to be subjected to all kinds of experiments against its will; like Gregor, interactions would be impersonal and impassive (like the social distance some keep from animals destined to be food, or the demur to naming laboratory animals). An emergent chimeric being’s development could be analogous to that of a human child: it will need to be nurtured and cared for; it will crave peers to learn from and require caregivers responsive to its needs; but its isolation will be fearful (“What am I?”) and lonely (“No one is like me!”).¹¹⁵ It would find

itself victimized by the utilitarian logic of the large, impersonal forces driven by the imperatives of research.¹¹⁶

If only we could prove that a particular chimera was “human”, then recourse would be human rights law! But what is it to be “human”—how much DNA, or social potential, or community belonging is sufficient? We already know that the law does not consider “human” to be sufficiently conferred by mental states: a “monster” could still think! It therefore seems that a purely socio-legal defense of what benefits human beings is not sufficient.¹¹⁷

Each creature, then, deserves ethical consideration for what it is, and a kind of constitution that specifies what harms it should not be permitted to suffer—not in terms of its likeness to humans or its possession of some least-common-denominator property, but in terms of what it is itself, the form of life it leads.¹¹⁸

Martha Nussbaum’s capability theory of justice is usefully compatible with the dialectical method, but there is no logical reason to limit its goal of mutuality towards others. As I have done, one can just start with the premise of agency (speaking to oneself, so to speak) rather than trying to convince another skeptical *human*,¹¹⁹ and thereby logically extend the list of capabilities to other, non-human beings.

The Pain of Self-Contradiction

There is no physical or psychological sensed pain experienced in contradictory claims. Self-contradiction is a psychological barrier to achieving goals because of the illogical nature of evaluative judgments about one’s failure or success; moreover, it is unethical to impose these same illogical wishes, ideas, or beliefs, upon others as a matter of generality¹²⁰ such as policy. The dialectical argument, above, can be used in such a way: someone could not deny that they were an agent, because the act of denial proves they are an agent; but moreover, denying someone else’s agency “dehumanizes” them and their community. Another example, relevant to this paper, is the claim that research that merely benefits human interests may be unethical if it violates, or does not fulfil, other plausible rights, too.¹²¹ So, in this respect, the justification for the mouse chimera experiment (see section “Why Create a Thinking Human/Non-Human Chimera?”) relies on a proposition: the chimera is “sufficiently like a human being” to be used in comparative brain research, yet “*not* sufficiently like us” to preclude invasive research. These definitions only follow because of the plausibility of the “impossibility of humanization,” which also means that it is impossible for positive law (within its present bounds and definitions) to apply to such a being: a chimera “like this” can *only* exist because of a desire to experiment on a *person-like-being*; and because such a being cannot be defined as a *legal person*. My argument exposes this fallacy.

As pointed out, the present research equilibrium may be justified on an account of utilitarianism, because the purported alternative would be “inhumane” to the suffering of human patients.¹²² That argument may also lead to justifying fruitless research, misrepresenting the necessity of certain kinds of imperatives, and raises the potential to exploit hope through hype and hubris.

Anthropocentric bias conflicts with intersubjective reports about agency: scientists cannot dissect some-*one* without harming *someone*. That contradiction, therefore, rules that the experiment itself is unethical, if its purpose is to study *human-like brains as functional analogs*. The only remedy is accepting that *the chimera experiment risks harm to an agent in respect to violating its rights, but it is justified by the experiment itself (utility) rather than the extant status of the subject*. The normative implications of this conclusion have practical relevance. It might be ethical to seek alternatives to such experiments: Human embryo and fetal research appear to be “ideal” models of neuronal development and may be used in legal experiments without the same criticisms given here. There are also opportunities to develop *in utero* mini-brains, or cerebral organoids, which may provide non-sentient models of human brain development.¹²³ Ultimately, however, dualists, as outlined in this paper’s introduction, will have to accept that research with human beings is the only way to truly study the perceived cultural uniqueness and scientific peculiarities of humanity.¹²⁴

Conclusions

This paper asked, “What do chimeras think about?” The question begins in vague terms, because no extant chimeric being is known to think: the possibility is scientifically unanswerable at this time, and philosophical progress (using theories of mind) is slow in respect to extrapolating from “our minds” to conditions for knowing “other minds” *just like ours*. So, I alluded to a more specific interpretation: What would a non-human animal/human chimera think about, *if it could think*? Philosophically, we can now say that since an agent “thinks” about its freedom and well-being, it is incontestable that such a being would value its freedom and well-being, too. *Thinking* (what “we” think about) therefore, reflects the fundamental purpose of rights as side constraints to consequential benefits: in this respect, we can’t ethically conduct invasive research on another person without their consent. While this last statement ought not to be surprising, the presumption that a chimera might think the same may strike some as being quite unsatisfactory. How can we know that it would have a perspective of its suffering, even if its life as a research subject would be one of confinement and torture, and likely short? The problem, as they may well point out, is that we *still* cannot know whether there is a conscious “light on” (so we can’t even start to ask the question *how* a chimera is possibly thinking, or *about* the subjective things it loves and dislikes, looks forward to, or fears). For some, such guesswork leads to unjustified precaution limiting valuable research and harming human patients.

My response is that even without an empirical answer, such experiments commit the experimenter to the possibility of causing harm, and as such, they must provide a stronger justification than utility can give. That is, if a thinking non-human being *in reality* is denied its rights, it is because they are not recognized as a *legal* person because subjectivity towards moral status strengthens doctrines of the greater good. This argument implicates the moral impunity of human rights institutions to provide illogical remedies that avoid affirming non-human rights: to tackle that question directly could undermine the utilitarian justifications of animal research and other areas of animal use, as well as justifies natural exploitation (with the inevitable costs to animals). Thus, the possible outcomes of chimera experiments also reflect on the contradictions in the present schemes for separating animal interests from ours (i.e., the duality of genetic/biological, behavioral, and evolutionary). As such, these beliefs allow institutions to create, at best, a state of *in limbo* for all non-human beings. They think that the non-entity “human” rights status of Happy is ethical, despite acknowledging that elephants plausibly—even likely—have moral (so why not legal?) interests.

The grand purpose of tackling the chimera problem in the way I have, is to ask “forward-looking questions... and whether and how such dispositions can be changed... [rather than preserving concepts like ‘legal persons’] that frustrate social, moral and political progress....”¹²⁵ Human exceptionalism may provide a necessary premise for human rights, but it does not provide a sufficient argument for rights in-and-of-themselves. So, it behooves us to ask about moral conditions for *persons* having their legal rights recognized.¹²⁶ The stronger argument made in this paper is to compel society to consider frameworks of rights in light of the possibilities for discovering non-human thinking life. Since it is inevitable that somewhere attempts will be made to bring novel beings into this world, we need to think not just about opportunities for research, but rationally creating a fairer society for non-human agents to live in.

However, the further ramification of this paper is that the expected treatment of any non-human being will be premised on societies’ tendency towards maintaining the utilitarian treatment of nature. Our current trajectory almost certainly will lead to ecological suicide (which is not good for “utility” either), but it is already inflicting harms on other natural species. Human exceptionalism is criticized from various environmentalist theories that challenge the incongruity of sustaining humanity while committing to the large-scale exploitation of nature. So, if they are committed to environmentalism, such institutions will have to wrestle with extending interests, duties, and obligations to non-human beings, and ultimately must find grounds for rights for (at least some) animals. Some jurisdictions are reconsidering dogmatic exclusions to rights protections for non-human beings and entities or recognizing the rights of nature to balance our interests with sustaining essential ecoservices.¹²⁷ The (re) emergence of movements to reconnect human culture with the natural world make a case that it is

necessary and therefore urgent to save planet Earth (for all our sakes). But they often fail to address the interests of other beings from outside of human-centric frameworks, especially when their capacities and needs are very different from “ours.”¹²⁸

If we are to make social progress towards a rational understanding of rights, we require a scientific and social understanding that reconnects culture and nature, and stabilizes our ecological interests, but we must also realize there are ethical conditions that shape the shared environment. The research concepts, mentioned in the section, “The Pain of Self-Contradiction,” are the start of a new regulatory scheme challenging humanistic contradictions, based on a philosophical approach to how animals “speak to us” about their rights—as companions, inhabitants, and workers.¹²⁹ This paper contributes to that idea, because it suggests that reasons for affording rights to animals can be grounded in what they “think” about. If that is understood from an ethical rationalist’s perspective, then the rights of chimpanzees, elephants, and dolphins, among others, *are* a matter for radical socio-legal discernment, and, as well, fundamental to comprehending the environmental crisis that all Earth’s inhabitants face. This at least questions society’s presumptions for excluding non-human species from the institutions that are meant to protect rights. Acknowledging that these are a specific kind of rights (where “thinking” may not extend rights to all creatures) could lead to the protection of essential ecological niches in ways that harmonize our interest with those we share the Planet.¹³⁰

Notes

1. Roger Scruton, for example, considers that although most non-human animals are factually sentient, sentience is not enough for moral status; Scruton R. *Animal Rights and Wrongs*. London: Demos; 1996.
2. Donagan A. *The Theory of Morality*. Chicago: University of Chicago Press; 1977, at 32.
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9. Andrews K. *The Animal Mind: An Introduction to the Philosophy of Animal Cognition*. London: Routledge; 2020.
10. See 7, Coggon 2012.
11. From this point, I will refer to ‘human/s’ (beings), and (non-human) ‘animal/s’ respectively. Although humans are animals, differences between them can be described as conceptual (e.g., “only humans have X; animals have signs of X”) and scalable (“humans are more accomplished at X”). See Frye B. The lion, the bat & the thermostat: Metaphors on consciousness. *Savannah Law Review* 2018;**5**:13–44.
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16. See Koplin's critical review of The International Society for Stem Cell Research (ISSCR) 2021 guidelines on stem cell research (who seem to hold this view): Koplin J. Response to the ISSCR guidelines on human–animal chimera research. *Bioethics* 2022;1–7. doi: [10.1111/bioe.13104](https://doi.org/10.1111/bioe.13104).
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20. See 13, Pietrzykowski 2018, at 66.
21. Brownsword R. *Law, Technology and Society: Reimagining the Regulatory Environment*. London: Routledge; 2019.
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23. *Matter of Nonhuman Rights Project, Inc. v Breheny* [2022] NY Slip Op 03859 (N.Y. Ct. App. June 14, 2022).
24. Capps B. Do chimeras have minds? The ethics of clinical research on a human-animal brain model. *Cambridge Quarterly of Healthcare Ethics* 2017;26:577–91.
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26. See 24, Capps 2017.
27. Capps B. Letters: Chimeras and the problem of other minds. *Hastings Center Report* 2020;50:46.
28. Streiffer R. In defense of the moral relevance of species boundaries. *American Journal of Bioethics* 2003;3:37–8.
29. Koplin J, Wilkinson D. Moral uncertainty and the farming of human-pig chimeras. *Journal of Medical Ethics* 2019;45:440–6.
30. See 16, Koplin 2022; For background, see Capps B. Authoritative regulation and the stem cell debate. *Bioethics* 2008;22:43–55.
31. Insoo Hyun has argued that a chimera would not develop self-consciousness of a morally relevant sort, because (among other things) there are reasons to think that self-consciousness requires a fully human brain in a fully human body (“No animals to date, however, not even non-human primates, have been proven to be language users that can express their beliefs propositionally”), and because, even if a chimera could technically develop these capacities, it would/could be raised under conditions that would *not* allow them to develop; Hyun I. From naïve pluripotency to chimeras: A new ethical challenge? *Development* 2015;142:6–8.
32. See 31, Hyun 2015.
33. See 31, Hyun 2015, on “fuzziness”.
34. See 23, *Nonhuman Rights Project v. Breheny* 2022.
35. See 23, *Nonhuman Rights Project v. Breheny* 2022, at 2.
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38. See 16, Koplin 2022.
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