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RESEARCH ARTICLE

Operationalising Moral Status: Approaching a Pragmatic Spectrum

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Abstract

Legal and ethical frameworks remain dominated by a broadly binary conception of moral status as the primary organising idea: entities are typically treated either as persons, with extensive rights, or as things, with at best limited protections. While many jurisdictions now recognise animal welfare and anti-cruelty duties, these measures generally stop short of acknowledging independent full moral status. This landscape is ill-suited to the diversity of entities whose capacities challenge existing categories, from nonhuman animals to unprecedented beings. This article proposes a pragmatic spectrum of moral status, conceptualised as a continuous gradient on which entities can be located according to their morally relevant capacities. Grounded in a triangulation of established ethical theories, the framework is structured by three anchor thresholds—sentience, consciousness, and sapience—allowing graduated protections to "kick in" at different points. The spectrum is applied using a multimodal approach to measurement, demonstrating how it can guide governance where current law leaves a vacuum. By moving beyond the person/thing distinction with a capacity-based continuum, this approach offers a flexible, anticipatory tool for recognising and responding to the moral claims of diverse entities while avoiding both overreach and neglect.

Keywords: bioethics; consciousness; moral status; policy; rights

The fractured foundation of personhood

Against a backdrop of rapid biotechnological advancement and a deepening understanding of non-human cognition, a crisis is emerging for our most basic moral and legal categories. Biotechnology is now creating a class of entities we might term "novel beings": any entity created through artifice and which might warrant some degree of moral status.[1] From synthetic organisms with no evolutionary history to cerebral organoids that mimic human brain function, these entities- alongside the natural animals whose capacities we are only now beginning to appreciate- expose the inadequacy of the conceptual tools we use to assign value and protection. At the heart of this crisis lies the concept of 'personhood', a term that serves as the primary gateway to moral status and legal rights but which is plagued by a deep, destabilising incoherence. Our current frameworks, built on an unstable foundation, are already failing to address the moral claims of known non-human animals; they are profoundly unprepared for the beings we are now capable of creating.[2] The claim here is not that protections are wholly absent, but that without a grounded logic they remain piecemeal, instrumental, and uneven. To understand the depth of this crisis, one must first deconstruct the fractured relationship between philosophical ideals of personhood and its application in the law.

Philosophically, personhood is often defined by a suite of sophisticated cognitive capacities. The philosopher Charles Taylor, for instance, describes a person as a being that can "hold values, make choices; in short, can adopt life-plans," a state that requires self-awareness and a coherent sense of one's own narrative identity across time.[3] Similarly, Mary Anne Warren proposed a highly influential set of

criteria that are widely held to be central to the concept of personhood in this moral sense: consciousness, particularly the capacity to feel pain; reasoning, the ability to solve complex problems; self-motivated activity, independent of direct external or genetic control; the capacity for complex communication; and the presence of self-concepts and self-awareness.[4] A being possessing these traits is considered a 'person' in the moral sense, or a full member of the moral community deserving of the highest degree of protection.[5]

However, a significant disconnect exists between this rich philosophical conception and its application in the law. Legal systems do not deploy 'personhood' as a consistent recognition of intrinsic moral worth but rather as a malleable, practical fiction. This is most starkly illustrated by the legal personality granted to non-human, non-sentient, and non-moral entities like corporations.[6] A corporation is designated a 'person' under the law not because it possesses any of the sophisticated capacities described by Taylor or Warren, but for purely instrumental reasons of legal and economic convenience.[7] This creates a jarring paradox: the law readily recognises a corporation, which has no mind or capacity to suffer, as a person with rights, while often denying that same status to a great ape that demonstrably possesses complex cognitive and emotional faculties.

This attitude is deeply embedded in the history of the law. The cornerstone of legal personhood in English common law, which determines who can be a victim of homicide, is the standard of being a "reasonable creature in being," a definition originating with the 17th-century jurist Sir Edward Coke.[8] While modern courts often treat "reasonable creature" as a synonym for "human being,"[9] a closer analysis reveals that Coke's emphasis was on the "faculty of reason" itself.[10] This standard was historically used not only to define the human subject but also to exclude certain humans from legal protection. So-called 'monsters'-infants born with severe deformities-were deemed not to have the "shape of mankind" and were thus denied the status of reasonable creatures, placing them outside the law's protection.[11] Although modern jurisprudence, as seen in the UK case *Re A (Minors) (conjoined twins)*, has firmly rejected this archaic and discriminatory concept,[12] it simultaneously affirms that the core question of who or what qualifies as a reasonable creature remains a "grave question of law".[13]

To address this and provide a workable answer to this 'grave question', this paper argues for a proactive approach. It puts forward a new, pragmatic framework designed for law and policy: the practical spectrum of moral status. To build this case, the paper will first diagnose the failure of the status quo by examining the legal system's struggles with animal personhood and the challenges of emerging biotechnologies. It will then detail the architecture of the proposed spectrum framework, grounding it in contemporary ethical theory and the practical, multimodal metrics that can be used to apply it. Finally, it will address the most significant objections to this project, arguing that a pragmatic and proactive approach is not only possible but necessary.

The bleeding edge: Legal and biological disruption

The incoherence of our legal and moral frameworks is not a dormant theoretical problem; it is an active and escalating issue playing out in courtrooms and laboratories across the globe. The established legal architecture, founded on assumptions about human uniqueness, is colliding with two disruptive forces: compelling evidence of sophisticated consciousness in non-human animals and the emergence of novel beings. These real-world cases are dismantling the walls separating human from non-human, and natural from artificial.[14]

The present crisis: Animal personhood

The Cambridge Declaration on Consciousness, signed in 2012 by a prominent group of neuroscientists, stated unequivocally that "humans are not unique in possessing the neurological substrates that generate consciousness."[15] The declaration marshalled convergent evidence to conclude that all mammals and birds, and many other creatures including octopuses, possess these substrates. The 2024 New York Declaration on Animal Consciousness went further, asserting "strong scientific support" for conscious

experience in all vertebrates and a "realistic possibility" in many invertebrates.[16] This consensus directly undermines the legal assumption that only humans possess the faculties that matter morally.

This new scientific reality has fuelled a wave of legal challenges worldwide, revealing a fundamental divide in how different legal systems conceptualise the relationship between humans and other animals. In the Global South, courts have begun embracing what might be called an eco-centric approach that challenges anthropocentric legal frameworks. The 2015 case of Sandra the orangutan in Argentina proved a watershed.[17] The court declared Sandra "una persona no humana" (a non-human person) and granted her a writ of *habeas corpus*,[18] ordering her transfer from a zoo to a sanctuary. The reasoning was straightforward: Sandra's demonstrated capacity for feelings and suffering entitled her to basic rights. Ecuador's Constitutional Court advanced this approach in the 2022 *Estrellita* case, ruling that individual wild animals are subjects of rights under the country's constitutional Rights of Nature provisions, possessing inherent value independent of their utility to humans.[19] The court explicitly rejected anthropocentrism here- these decisions reflect a legal philosophy that sees humans as part of, rather than separate from, the natural world.[20]

The Global North presents a starkly different picture, remaining wedded to a reciprocity-based model where rights and duties are viewed as inextricably linked.[21] The Nonhuman Rights Project has brought sophisticated legal challenges on behalf of chimpanzees, elephants, and other cognitively complex animals, submitting thousands of pages of scientific evidence about their autonomy, self-awareness, and emotional complexity.[22] Yet courts have consistently rejected these petitions.

A common line of reasoning is exemplified in *Lavery*, where New York courts denied *habeas corpus* to a chimpanzee, Tommy.[23] The court held that rights are contingent upon the capacity to bear duties and submit to societal responsibilities. Since a chimpanzee cannot be held legally accountable for its actions, it cannot possess legal rights. This logic was reaffirmed in the 2022 *Happy* case (and subsequent appeals), where New York's highest court warned that granting rights to an elephant would have a "destabilizing" effect on society.[24]

This reciprocity argument is questionable. We grant full legal rights to human infants and adults with severe cognitive disabilities who cannot bear duties or responsibilities. Dissenting opinions in *Happy* pointed out this inconsistency, arguing forcefully that the capacity to suffer unjust confinement, not the ability to bear duties, should ground the right to bodily liberty. These dissents, along with the contrasting Global South decisions, signal that the scientific evidence is becoming too powerful to ignore indefinitely.

The imminent crisis: The biotechnological frontier

While society grapples with the moral status of the animals that have evolved alongside us, an even more direct challenge is emerging from laboratories. The field of synthetic (or more recently, engineered) biology, the rational design of biological systems and living organisms, is creating entities that fall entirely outside our established definitions of life. The Venter Institute's creation as far back as 2016 of JCVI-syn3.0, a synthetic organism with a completely man-made genome, represents a lifeform with no natural evolutionary history, a true 'novel being' that defies existing biological and legal classification.[25]

This frontier work gives rise to what we might term a "moral mimicry" dilemma: the closer a scientific model comes to accurately replicating a morally significant biological system, the closer it may come to possessing the moral status of that which it mimics. This risk is acutely present in the development of cerebral organoids- three-dimensional structures of human neural tissue grown from stem cells that mimic aspects of the brain's architecture. Neural models show increasingly complex coordination[26] and even wave-like electrical patterns reported as analogous to those in foetal brains.[27] As scientists succeed in creating organoids that more closely resemble a functioning human brain,[28] or model human embryos, they face the distinct possibility of inadvertently creating entities with sentience and the capacity to suffer. Because these creations are so novel, they tend to exist in a regulatory lacuna outside the purview of existing regulatory bodies like the UK's Human Fertilisation and Embryology Authority (HFEA) or Human Tissue Authority (HTA).[29] The scientific goal of creating useful biological mimics thus carries an inherent ethical risk for which we have no prepared response.

This lacuna is deepened by the law's reliance on outdated biological criteria. In English criminal law, and in a range of other jurisdictions, a foetus only gains the full protection of a legal person once it is "born alive," meaning it exists as a live child capable in principle of independent existence.[30] This standard, designed to draw a line between foetus and infant, becomes nonsensical when applied to novel beings.[31] A synthetic organism is not 'born' but assembled; an artificial general intelligence is not gestated but activated. By tethering legal status to a specific biological event, the law inadvertently risks leaving capacity-bearing novel beings only partially covered, potentially denying protection to a conscious being simply because its origin does not match our own.

This crisis of categorisation is not limited to non-human creations, rather it could extend to the future of our own species. As philosopher Nicholas Agar argues, radical human enhancement technologies could give rise to "posthumans"- individuals so fundamentally altered that they might no longer "deserve to be called human".[32] This creates the alarming possibility that such individuals could lose their legal status as 'reasonable creatures', potentially forfeiting the very rights and protections that personhood is meant to guarantee.

These examples- from synthetic life to disembodied neural networks to posthumans- underscore the severe limitations of our current frameworks.[33] They demonstrate the urgent need for a more nuanced, adaptable, and proactive approach to assessing moral status, one capable of accounting for the gradients of complexity and potential for consciousness that these imminent beings possess. Whilst many jurisdictions already display gradualist features- for example stronger duties toward primates or vertebrates than toward insects- these arrangements remain fragmentary and anthropocentrically framed.[34] Taken together, the animal litigation and biotechnological developments show a welfare architecture that is already failing in practice. Courts in some jurisdictions are edging toward intrinsic value while others cling to reciprocity, even as judicial dissents highlight the inconsistencies. Without a framework capable of handling gradations of consciousness and novel forms of being, legal responses will remain ad hoc and unstable.

The spectrum of moral status: A proposed framework

Given that our existing legal and philosophical frameworks are demonstrably ill-equipped for the challenges posed by novel biotechnologies and advancing animal science, a new approach is required. To continue with the current ad hoc, reactive system is to court a societal crisis with no prepared tools for resolution. History shows that law inevitably lags behind science.[35] This was precisely the situation with in-vitro fertilisation, which for years developed in a regulatory void until the Warnock Committee provided a pragmatic path forward, leading to legislation like the UK's Human Fertilisation and Embryology Act 1990.[36] Today, we face a similar, if far broader, challenge for which existing biolaw is insufficient.

The central contention of this paper is the necessity of proactively developing a practical framework to guide legal and regulatory decision-making about what kinds of beings should receive what kinds of protections. The goal is not to achieve philosophical perfection, which is likely impossible, but to construct a pragmatic schematic that is workable and policy-facing. This appeal to pragmatism has clear precedent. The "14-day rule" for human embryo research is a quintessential example of a successful, albeit philosophically imperfect, compromise.[37] It established a clear, workable line that provided regulatory certainty, allowing science to proceed even in the absence of universal moral consensus. In a world of deep ethical pluralism, a framework that insists on perfection risks becoming useless. The proposed framework, therefore, does not seek to definitively solve the 'hard problem' of consciousness. Instead, it offers a 'good enough' model acknowledging gradations of moral worth in a way that existing regimes calibrating duties by species or clade cannot.

The proposed solution is a spectrum of moral status. This is not a new set of rigid categories, but a continuous gradient upon which any entity's moral status can be plotted based on how far it has something about itself that "can make moral claims on those with moral agency".[38] This builds on intuitions we already hold: that even non-living things such as great works of art, ancient forests, or

human remains have value warranting protection. On this account, capacities ground standing while relational facts, such as dependency, assumption of care, or creation, allocate and can intensify duties. By assessing an entity based on its capacities and plotting it on this continuum, escalating legal protections can 'kick in' at various thresholds, from basic welfare rights to full personhood. Crucially, the spectrum does not discard current welfare provisions; it provides a common rationale to align and extend them, clarifying why protections escalate and how to calibrate them across biologically and technologically diverse cases.

To make this gradient usable for policymakers, it is anchored by three key, recognisable progressions of consciousness: sentience, consciousness, and sapience. These are not intended as discrete boxes but as orienting points of reference along the continuous line.

- **Sentience Threshold**: This represents the entry point for moral status on the spectrum. It is defined by the capacity to have phenomenal experiences, particularly positive and negative states like pleasure and pain. This anchor is rooted in the foundational bioethical principle articulated by Jeremy Bentham: "The question is not, Can they reason? nor, Can they talk? but, Can they suffer?"[39] Any entity that can suffer has interests and thus makes a moral claim on us, securing its place on the spectrum. This aligns with the scientific consensus from the Cambridge Declaration, which locates the capacity for "affective states" in subcortical brain structures shared widely among animals[40]; and with the philosophical view of thinkers like David DeGrazia, who suggest that sentience is sufficient for the possession of interests and therefore moral status.[41]
- **Consciousness Threshold**: This is a broad and complex intermediate stage representing a significant spread of cognitive abilities beyond mere sentience. It encompasses beings who are self-aware and capable of a wider range of subjective mental states. This part of the spectrum can be structured using distinctions like those proposed by the neuroscientist Gerald Edelman, distinguishing between primary consciousness (a sensory awareness of the present world, likely found in many animals) and secondary consciousness (a more complex self-awareness that includes a sense of one's own history and future plans).[42] Primary consciousness could be seen to represent the lower end of this zone, while the emergence of secondary consciousness marks a significant step towards the upper boundary of full sapience. The Cambridge Declaration's recognition of varying levels of evidence for conscious experience[43] across different animal groups implicitly supports such a graded view within this zone.
- **Sapience Threshold**: This is the upper anchor of the spectrum, characterised by the possession of advanced, human-like cognitive abilities such as abstract thought, advanced reasoning, narrative identity, and moral agency. This level corresponds most closely with 'full moral status' and the legal status of personhood. A sapient being would meet the common law definition of a 'reasonable creature in being' and the rich philosophical criteria for personhood outlined in Section "The fractured foundation of personhood." Crucially, this status is defined by capacity, not by biology.[44] As has been argued elsewhere, membership in the species *Homo sapiens* is "neither sufficient nor even necessary" for this status.[45] This explicitly allows for the possibility that a non-biological AGI, a synthetic organism, or a posthuman could, if it demonstrates the requisite capacities, be plotted at the sapient end of the spectrum.[46] To be clear on the distinction, while the upper end of Consciousness may involve self-awareness, Sapience as an anchor implies a capacity for second-order reflection on one's own mental states and moral agency, marking a qualitative shift from awareness to self-evaluation.

The practical, normative force of this framework lies in its ability to ground distinct levels of legal protection to different points along the spectrum. Placement would determine not only the presence of rights, but their nature and strength. For instance, an entity qualifying as sentient would be entitled to fundamental welfare rights, including robust anti-cruelty protections and stringent limitations on non-essential research. Further along the spectrum, in the consciousness zone, protections would escalate to include (among others) rights against confinement without cause or killing for trivial purposes, reflecting the being's more complex interests. Finally, at the sapience threshold, an entity would qualify for the full

suite of rights and obligations associated with legal personhood or 'full moral status', equivalent to those granted to human persons. By linking escalating capacities to escalating protections, the spectrum provides a transparent and defensible logic for regulatory and judicial decision-making.

The tripartite structure of this spectrum is not arbitrary. It pragmatically maps onto three distinct and escalating schools of ethical thought, making it a powerful tool for building consensus. The sentience anchor aligns with classical Utilitarianism, where the primary moral concern is aggregate welfare and the prevention of suffering. The sapience anchor aligns with Kantian and deontological traditions, which ground fundamental rights in the capacities for rationality and autonomy that define personhood. The vast and gradated intermediate consciousness zone provides a necessary conceptual space for the more nuanced theories of modern animal ethics, which grapple with beings that are clearly more than merely sentient but may not meet the high bar for full sapience.[47] By accommodating utilitarian concerns for the sentient, deontological concerns for the sapient, and the complex middle ground, the framework allows policymakers to engage with a range of ethical perspectives without being forced to commit to a single, totalising theory. It is a tool for practical synthesis, not philosophical dogmatism.

Finally, it must be acknowledged that this one-dimensional spectrum, while useful, is itself a simplification of a more complex moral reality. A more accurate representation might be multidimensional, with different axes for cognitive complexity, affective richness, social embeddedness, and other morally relevant factors. Some beings might rate high on one dimension while low on others. The one-dimensional spectrum represents a pragmatic compromise-complex enough to improve on the person/thing distinction, simple enough to be practically applicable.

Moreover, the spectrum must be understood as a living framework, not a fixed taxonomy. As our scientific understanding of consciousness evolves and as we encounter new forms of being, the spectrum itself must be capable of growth and revision. The boundaries between sentience, consciousness, and sapience may shift. New anchoring points may be needed. The framework's value lies not in providing permanent answers but in structuring ongoing moral reflection and adaptation.

This dynamic quality is especially important given the pace of biotechnological development. By the time any framework is fully implemented, new challenges will have emerged. The spectrum therefore aims not to anticipate every possible being but to provide a flexible tool for moral assessment that can evolve with our changing world. It offers not a finalised solution but a beginning- a more nuanced and adaptable approach to moral status that can help us navigate the challenges ahead.

Philosophical triangulation

While the spectrum is designed as a practical tool for law and policy, it must demonstrate intellectual coherence with established ethical theory to be credible and robust. The proposed framework does not emerge *ex nihilo* but builds upon decades of rigorous philosophical work on moral status, animal ethics, and the grounds of moral consideration. By triangulating the spectrum against three particularly influential theoretical approaches (those of Mary Anne Warren, Tom Regan, and David DeGrazia) we can illuminate its foundations. Each of the three represents a major strand in contemporary thinking about moral status, and together they map the theoretical territory within which the spectrum operates.

Warren's multi-criterial approach

Mary Anne Warren's work provides a powerful foundation for the multimodal, capacity-based assessment at the heart of the spectrum framework. Warren famously argues against any single-property criterion for moral status, proposing instead a multi-criterial approach. Her influential list of traits central to personhood (consciousness, reasoning, self-motivated activity, communication, and self-awareness) exemplifies the kind of characteristic-based assessment the spectrum in large part employs.[48] In her later work, she expands this with seven principles, including respect for life, an anti-cruelty principle, agents' rights, human rights, ecological principles, the relevance of relationships, and a

principle of transitivity of respect.[49] While these principles provide a nuanced, non-absolutist view of moral status, their complexity makes them difficult to operationalise for pragmatic application.

However, this rejection of a single magic bullet for moral status directly supports the spectrum's reliance on a suite of metrics. Furthermore, Warren's 'weak' animal rights position argues for a "sliding scale" of moral status where the strength of an animal's rights can vary depending on its degree of sentience and mental sophistication.[50] She argues that we have stronger obligations to animals with higher degrees of mental complexity, like apes and dolphins, than we do to those with weaker capacities, like insects or tadpoles. This "sliding scale" is, in essence, a philosophical articulation of the very gradient the proposed spectrum aims to operationalise for policy. Warren's work thus provides a direct precedent for a graded approach to moral status grounded in a multiplicity of morally relevant capacities.

Regan's rights-based view

Tom Regan's rights-based theory offers a tool for dismantling the primary legal argument used to deny rights to non-human animals, directly refuting the logic from cases like those of Tommy and Happy with his distinction between moral agents and moral patients.[51] Moral agents are individuals with sophisticated capacities who can be held morally accountable for their actions and who have duties to others. Moral patients, in contrast, lack the capacity for moral deliberation and cannot do right or wrong, but they can be the recipients of right or wrong actions- they can be wronged. Human infants and adults with severe cognitive impairments are paradigm cases of human moral patients.

For Regan, the criterion for having fundamental rights is not moral agency but being a "subject-of-a-life." A subject-of-a-life is an individual with beliefs, desires, perception, memory, a sense of the future, an emotional life, and an individual welfare that can fare well or ill for them.[52] All subjects-of-a-life, whether they are moral agents or moral patients, possess equal inherent value and thus a fundamental right to respectful treatment. This argument provides the ammunition to counter the courts' "no duties, no rights" claim. It demonstrates that our own moral system already grants rights to moral patients (e.g., human infants), making the exclusion of non-human moral patients an act of arbitrary speciesism rather than a consistent application of legal principle.

Further, while Regan opposed degrees of moral status, he acknowledged what he called "preference principles" for resolving conflicts. When forced to choose between harming a being with a richer set of experiences and one with a more limited set, we should prefer to harm the latter. This concession opens conceptual space for something like the spectrum while maintaining Regan's core insight about basic rights. The spectrum can accommodate Regan's threshold concept, perhaps at the sentience boundary, while also recognising gradations above that threshold.

DeGrazia's interest-based view

David DeGrazia's work offers the most direct and detailed philosophical parallel to a graded model of moral status. DeGrazia defines moral status as arising when a being has interests that ground moral obligations in others.[53] He explicitly rejects the traditional all-or-nothing view and explores whether moral status admits degrees. He proposes two distinct models for how this might work.

The "Unequal Interests Model" holds that all sentient beings deserve equal consideration of their interests, but the interests themselves may differ dramatically in content and moral weight.[54] A mouse and a human both have interests in avoiding pain, and both interests matter, but a human's interest in completing a life project differs categorically from any interest a mouse could possess.

The "Unequal Consideration Model" goes further, suggesting that even similar interests might warrant different moral weight depending on the type of being involved.[55] A person's interest in avoiding a specific pain might count more heavily than a fish's interest in avoiding the same pain. This model maps more directly onto the spectrum framework, where a being's location determines not just what interests it can have but how much those interests weigh in moral deliberation.

DeGrazia's stance is particularly valuable for its philosophical rigor in defending what many intuitively believe but struggle to articulate: that moral status is not binary but scalar. His work addresses standard objections to scalar approaches and shows how degrees of moral status can be coherent with our other moral commitments. This provides a sophisticated philosophical architecture that supports the core mechanism of the spectrum.

These three approaches are not mutually exclusive but provide different lenses through which to understand and justify the spectrum. Warren's multi-criterialism informs how we assess a being's capacities-through multiple metrics rather than a single test. Regan's agent/patient distinction helps justify why beings at different points on the spectrum can possess rights and protections regardless of their capacity for duties. DeGrazia's models explain the mechanism by which different levels of capacity translate into different degrees of moral consideration or different types of protections.

The spectrum reframes the philosophical debate in policy-relevant terms. Rather than asking policy-makers to resolve the correct theory of moral status, it incorporates insights from a range thereof to establish that graded moral status is both coherent and well-grounded, while functioning pragmatically in legal and regulatory contexts. The next question is how such gradations can be assessed in practice.

A multimodal approach to measurement

A framework is only as useful as the tools used to apply it. The crucial subsequent task is to establish how one might reasonably place a given being onto the spectrum. Consciousness is not a monolith, and it is unlikely that any single, straightforward metric will be sufficient to capture its nuances. A better approach, and the one advocated here, must be highly multimodal, drawing on a number of individual metrics and scales that can evaluate moral status in a variety of ways. What follows is not an exhaustive list, but an exploration of several worthwhile starting points, each of which warrants specific and rigorous work to develop into a useful metric that can be applied to the spectrum model.

Cognitive and behavioural metrics

The most intuitive approach is to assess a being based on measurable cognitive capacities generally held to indicate consciousness or personhood. This aligns closely with Warren's multi-criterial approach and has the advantage of decades of scientific research in comparative cognition. We already possess sophisticated methods to evaluate many of the capacities associated with philosophical personhood- the ability to perceive and understand information, to learn, to process language, to plan for the future, and to possess self-awareness.

Contemporary cognitive science has developed specific experimental paradigms that can serve as practical tools for assessment. For instance, self-awareness is often tested through the mirror self-recognition (MSR) test, where an animal is marked on a part of its body visible only in a mirror.[56] This is a widely applicable test: species that have demonstrated this capacity include most great apes, dolphins, elephants, and even some birds and fish.[57] However, we must be cautious about over-relying on any single test. The MSR test is heavily vision-dependent and may produce false negatives in species that rely primarily on other senses or have different social behaviours around eye contact.

Similarly, theory of mind- the ability to understand that others have beliefs and desires different from one's own- can be assessed in non-humans through various paradigms adapted from human developmental psychology.[58] Episodic memory, the capacity to mentally travel back in time to recall specific events, has been demonstrated in food-caching birds showing they remember not just what they cached and where, but also when.[59] Metacognition, or the ability to monitor one's own mental states, has been shown in monkeys and dolphins through "opt-out" paradigms where animals can choose to avoid difficult trials, demonstrating awareness of their own uncertainty.[60]

Importantly, this approach need not reinvent the wheel. The law already has well-developed frameworks for assessing cognitive capacity in humans. The Mental Capacity Act 2005 provides functional tests for decision-making capacity: the ability to understand, retain, use and weigh

information, and communicate a decision. Adapting these existing legal frameworks for non-human subjects would ground the spectrum in established legal precedent while extending its reach. Moving from inventing a consciousness-meter to adapting existing capacity assessments makes the task both more achievable and more legally defensible.

Complexity

A different, and potentially less anthropocentric, approach can be found in complexity science. This approach seeks to identify consciousness not through specific behaviours but through the underlying structure and dynamics of information processing.[61] The appeal here is the possibility of a more objective, substrate-neutral metric that could be applied equally to biological brains, synthetic organisms, or artificial systems. Theories such as Integrated Information Theory (IIT) propose similar quantitative metrics for consciousness.[62] IIT's core claim is that consciousness corresponds to a system's level of integrated information-essentially, the extent to which a system's parts work together in a way that creates more information than the sum of its parts.[63] The appeal of such a metric is its objectivity; it could, in principle, be applied to a biological brain, a synthetic organoid, or a disembodied AGI where behavioural assessments would likely fail. While IIT faces significant criticisms, including computational intractability and controversial implications like panpsychism, it illustrates the type of complexity-based approach that could prove valuable. Its inclusion here serves to exemplify the type of objective, non-anthropocentric metric a comprehensive framework should consider. The key insight from this approach is that moral status might be measurable through formal properties of systems rather than specific capacities or behaviours. This could be particularly crucial for assessing novel beings with radically different architectures from evolved biological systems.

Interest-based metrics

This approach ranks beings based on the nature and weight of their interests. Closely aligned with DeGrazia's framework, this approach recognises that different beings may have different types of interests, and these interests may vary in their moral significance. This intuition is already reflected in the tiered systems of protection for research animals worldwide, where a fruit fly may have some interest in avoiding harm, but this interest seems qualitatively different from a mouse's interest in avoiding pain, which in turn differs from a chimpanzee's interest in maintaining social bonds. This has value; the weight of an interest can be grounded in the entity's capacity to experience and comprehend what constitutes benefit and harm. A being capable of suffering has basic welfare interests. A being with temporal self-awareness and the ability to form life plans has qualitatively richer and more complex interests in its own future. This creates a natural gradient that maps directly onto the spectrum.

Relational metrics

Moral status is not solely an intrinsic property; it also has a crucial extrinsic, relational component, a perspective central to care ethics. Our moral obligations often arise from our relationships with others, their dependency on us, and their vulnerability. We tend to perceive it as morally worse to harm a companion animal than a wild one, not because of a difference in intrinsic capacities, but because of the value and obligations created by the relationship. This relational approach helps to further explain and justify the strong protections we grant to beings who might score low on purely capacitive metrics, such as human infants or individuals with severe cognitive impairments, due to their place in our webs of care. For novel beings, this raises important questions. What relationships might we form with synthetic organisms or enhanced beings? What obligations might arise from creating beings that are dependent on us? We routinely recognise special obligations where relationships create directed duties (for example, parents to children, clinicians to patients, or keepers to animals). A sentient synthetic organism designed for a specific purpose, or even an AGI brought into existence by a corporation, may not be a morally

neutral object but rather a 'moral patient' to whom specific duties are owed by virtue of this foundational relationship of creation and dependence.[64] The relational approach ensures we don't assess beings in isolation but consider the moral significance of their connections to others.

Responsibility metrics

Metrics can also be derived from concepts already familiar to the law. A responsibility-based approach asks to what extent an entity can be held accountable for its actions. This has a powerful legal anchor, as courts have, as discussed, explicitly cited the "incapability to bear any legal duties, submit to societal responsibilities or be held legally accountable" as the primary reason for denying chimpanzees the full rights of a person.[65] Whilst, as above, this criterion is problematic-we grant rights to many humans who cannot bear duties-it remains legally influential. A more nuanced responsibility-based approach might ask not whether a being can be held fully responsible, but whether it exhibits any form of agency or self-direction. Can it make choices? Does it act on reasons, even if it cannot reflect on them? This connects to legal concepts of graduated responsibility-we already recognise different levels of culpability based on mental capacity. This provides a direct link between an entity's placement on the spectrum and legal consequences, as higher moral status could correspond to a greater capacity for legal responsibility.

Synthesis

These five approaches reveal different dimensions of moral status: intrinsic and relational, cognitive and affective, individual and social. This multimodal analysis is necessary, but it presents its own challenge: how should these different metrics be weighted? How would the law resolve a case where an entity scores highly on cognitive complexity but lacks relational connections, versus a severely cognitively disabled human infant with minimal cognitive capacities but deep relational connections? The framework's role is to structure these debates- perhaps by modulating a capacity-grounded baseline with the assignment of duties to specific agents, and adjusting the stringency of those duties. It makes visible the value judgements that currently operate implicitly and inconsistently in our treatment of different beings. In doing so, it creates space for democratic deliberation about fundamental questions.

For practical application, we might envision a process where each metric provides input into an overall assessment, with the weights adjusted based on context and purpose. The framework would provide guidance on relevant factors and considerations while leaving room for judgment about their relative importance in specific cases. This preserves the pragmatic flexibility essential for law and policy while ensuring decisions are principled rather than arbitrary.

Inevitable challenges

Any proposal as ambitious as a comprehensive framework for moral status must confront significant and valid objections. Acknowledging these challenges is not a sign of weakness but rather highlights why a pragmatic, rather than a perfect, solution is the only viable path forward. Two primary objections stand out: the fundamental epistemic gap that separates our minds from others, and the immense practical problem of scale in developing and applying multiple metrics. These objections are not fatal flaws but rather features that shape how the framework must be understood and applied.

The epistemic gap and the bat in the room

The most profound philosophical challenge to this entire project is the problem of other minds, or the epistemic gap. This objection is most famously articulated in Thomas Nagel's seminal 1974 paper, "What Is It Like to Be a Bat?".[66] Nagel argues that consciousness is an irreducibly subjective, first-person phenomenon. There is "something that it is like to be" a bat, and this subjective character of experience is accessible only from the bat's single point of view. We can know all the objective, third-person facts about

a bat's neurobiology and its system of echolocation, but we can never truly know what it is like for the bat to be a bat. This creates a fundamental epistemic gap between our understanding and the reality of another being's conscious experience. If we can never truly know the nature of another's consciousness, how can we possibly build a framework to assess and rank it? This challenge is familiar in the practical guise of the Collingridge Dilemma, which posits a double-bind for technology regulation: in the early stages of a technology's development, not enough is known to regulate it effectively, but by the time its consequences are clear, it has become too entrenched to control.[67] While this epistemic challenge is undeniable, waiting for certainty is not a neutral position; it is a decision to risk being unprepared.

The framework is designed to sidestep this intractable 'hard problem'. Its goal is not metaphysical-to know the bat's subjective experience-but ethical and legal: to decide how we, as moral agents, ought to treat the bat. It achieves this by relying on objective, third-person evidence as proxies for the capacities that we, as a society, deem morally relevant. This approach has deep precedent in law. Legal systems routinely make binding decisions about mental states without solving the philosophical problem of other minds. Courts determine whether a defendant acted "knowingly" or whether a testator possessed "sound mind" based on behavioural evidence and reasonable inference, not direct access to subjective experience. The spectrum simply extends this pragmatic posture: we do not solve consciousness; we decide how to treat beings in light of publicly legible proxies.

The problem of scale

The second major objection is one of immense logistical scale. The project of developing, validating, and applying a full suite of these metrics is vast, and far beyond the scope of this paper. More challenging still is the above problem of synthesis: how do we weight and combine different metrics that may point in different directions? The challenge multiplies when we consider implementation. Who will develop these metrics? How will they be validated? What happens when different jurisdictions weight them differently? The perfect theoretical framework could easily collapse into inconsistent application. Undoubtedly these are challenges, but they are practical challenges. While the development and implementation of this framework will require substantial work, our current system already makes such judgments implicitly-and often inconsistently. By making the different dimensions of moral value explicit, the framework forces a transparent and necessary public debate about our societal values, which is far preferable to the current approach.

A need for pragmatism

These two objections are best understood as two faces of the same deep challenge. Because we cannot access consciousness directly (the epistemic gap), we must rely on multiple, imperfect proxies (creating the scale problem). Because we must use multiple metrics, we cannot achieve certainty about consciousness (reinforcing the epistemic gap). To wait for a perfect, universally applicable solution is to risk paralysis. As novel beings and their precursor technologies continue to advance, inaction becomes a choice with profound moral consequences. The framework's value lies not in solving the intractable problem of consciousness, but in providing a workable structure for the unavoidable legal and ethical decisions that lie ahead. The alternative- waiting for certainty while beings of uncertain status proliferate around us- is a luxury we no longer possess.

Conclusion

The convergent advancement of biotechnology and cognitive science has brought human society to a critical juncture. As this paper has demonstrated, our established legal and moral frameworks, built upon a species-specific and often incoherent understanding of personhood, are profoundly inadequate for the challenges already upon us, let alone those that are imminent. The legal system's struggles to address the

moral status of non-human animals, coupled with the emergence of novel biological entities that defy our existing categories, create a crisis of categorisation that demands a proactive response.

In response to this escalating crisis, this paper has put forward the architecture for a practical and defensible solution: a spectrum of moral status. By moving beyond the the (limited) gradations already present in animal frameworks between person and property, this approach offers something more nuanced and adaptable. We have shown that this is not a radical invention but a logical evolution of existing gradualist-leaning practices, grounded in established legal principles, coherent with major traditions in contemporary ethical theory, and connected to a suite of practical, multimodal metrics for its application.

The primary virtue of this approach lies in its deliberate pragmatism. By acknowledging the fundamental epistemic gap that separates us from other minds and the practical challenges of measurement, the framework avoids a false certainty. Instead, it provides a durable structure for making necessary decisions in a world of deep moral pluralism and accelerating technological change. The benefit of developing such a framework is twofold: not only does it prepare us for the advent of novel beings, but it also provides a more coherent way to address the pressing ethical questions we already face concerning the rights and protections of non-human animals.

A logically sound framework is not enough on its own, however; its implementation must also navigate a complex public and political sphere where the very idea of graded moral status for non-human or synthetic beings will be intensely debated.

The central choice is therefore not whether to engage with these complex issues, but how: reactively, once a crisis is unavoidable, or proactively, with a principled structure. The task of fully developing and implementing this model is significant and cannot be the work of a single discipline. It will require a dedicated and sustained effort from legal scholars, philosophers, cognitive scientists, biotechnologists, and public representatives. The work of the Warnock Committee serves as a powerful precedent for the kind of focused, multidisciplinary deliberation that is now urgently required.[68] The conversation must begin in earnest, before it is too late to act effectively. The beings who will be affected by our choice-from the chimpanzees in our laboratories to the organoids in our petri dishes to the novel entities of the near future-deserve better than our continued moral paralysis.

Notes

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20. We might also note instances in which natural landscapes and geographic features have been granted legal personhood for comparable reasons, e.g., New Zealand's Te Urewera Act 2014 No 51; available at https://www.legislation.govt.nz/act/public/2014/0051/latest/whole.html (last accessed 12 Aug 2025).
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