The Human Species as a Self-Shaping Form of Life

Paolo Piccari*

Abstract

This paper examines emerging ethical questions arising from biological and technological transformations, tracing the development of bioethics from its early formulations to contemporary debates on genetic engineering, neurobiology and interspecies moral consideration. It first investigates the evolutionary and cultural conditions underlying ethical systems, arguing that moral practices develop through the interaction of biological dispositions, social cooperation and linguistic codification. It then considers human predominance within the biosphere, speciesism and the ethical standing of non-human animals. The discussion of human nature questions essentialist claims of immutability while distinguishing the possibility of biological modification from its moral justification. Finally, the paper examines genetic enhancement and potential posthuman forms of life. The paper argues that the evolutionary contingency of human nature makes deliberate biological transformation conceivable without establishing its moral legitimacy. Humanity's capacity to shape aspects of its biological future must therefore be assessed in relation to autonomy, responsibility, intergenerational consequences and the interests of other living beings.

Keywords: bioethics, human nature, speciesism, genetic enhancement, posthumanity

1. Introduction

Although the term "Bio-Ethik" had already been introduced by Fritz Jahr in 1927, Van Rensselaer Potter independently employed the term "bioethics" in 1970 to designate an ethical approach encompassing humanity's responsibilities towards other human beings and the biosphere as a whole. The term "bioethics" has also come to indicate, in a broad sense, the study of ethical questions arising from developments in the biological and medical sciences, while retaining its connection with ecological ethics. In this sense, bioethics has become a specialised yet interdisciplinary area of study and may be considered a branch of ethics or a form of applied ethics. Indeed, we may say that bioethics is simultaneously a field of research and a practical instrument for addressing and resolving concrete problems that concern the human species and other animal species. It is grounded in extensive philosophical and anthropological conceptions, which are often expressed in systems of principles useful for regulating human relationships and identifying norms for individual,

* University of Siena, Italy – paolo.piccari@unisi.it

© 2026 ARKETE. All Rights Reserved

interpersonal and social life. While bioethics remains closely connected to general ethical theory, its specific field of inquiry allows it to develop principles and normative perspectives that may challenge traditional ethical frameworks, thereby contributing to the transformation of established moral conceptions (Potter 1971).

The central theme of bioethics is the notion of life, which can be understood in different ways, and which implies an examination of the relationship between the "natural" and the "artificial", as well as the notion of "nature" in general and "human nature" in particular. To what extent can ethical and bioethical questions be meaningfully discussed if moral judgements are regarded as mere expressions of subjective preferences? Ethical positions must be coherent, meaning that they must not contain internal contradictions.

For instance, if one person prefers salted bread and another prefers unsalted bread, these preferences are not necessarily in conflict, since both merely express subjective tastes. However, if one person maintains that physicians should sometimes help patients to die, and another asserts the opposite, then they are not just expressing different preferences but are in clear disagreement about whether physician-assisted suicide is permissible. It is with issues of this kind, and many others, that bioethics must increasingly concern itself. In this respect, bioethics may be described as a frontier ethics, insofar as it must continually address emerging questions arising from the changing needs of the human species and advances in the biomedical sciences, while critically examining their ethical implications.

The human species is able to transform its own conditions of existence and those of other living species in ways that may soon make it possible to consciously modify the biogenetic structure of living beings and human beings themselves on the basis of current knowledge and knowledge that may emerge from ongoing research in genetics, genomics, neurogenetics, genetic engineering and biotechnology. In this context, questions concerning genetic enhancement and the history of eugenics become increasingly pressing. Although hereditary genome editing might in principle affect some biological traits, attempts to modify complex cognitive capacities face substantial scientific uncertainties, including the polygenic and environmentally sensitive character of those traits (Visscher et al. 2025).

In this sense, the human species has acquired the capacity to intervene consciously in biological processes, a capacity that is itself a product of biological and cultural evolution. The possibility of deliberate biological and genetic intervention may thus be understood as a development arising from the interaction between biological evolution, the expansion of human cognitive capacities and technological progress. In particular, the evolution of the human brain has enabled forms of scientific knowledge and technological agency through which humanity can increasingly intervene in the biological constitution of living organisms, including its own. The outcomes of such interventions remain uncertain, but they may open new possibilities for the future of the human species, including the overcoming of certain biological limitations and the development of adaptive capacities that could enable human life to survive in environments beyond Earth.

© 2026 ARKETE. All Rights Reserved

2. The phylogeny of ethical systems and the origin of ethical behaviour

From an evolutionary and historical perspective, the emergence of ethical practices can be related to the attribution of value to behaviours and forms of conduct that have proved advantageous to individuals or social groups, insofar as they have contributed to satisfying their needs, expectations and collective aims. In short, these are behaviours, attitudes and practices that have been successful in achieving individual or collective goals, and are therefore regarded as valuable. Through processes of social recognition and cultural transmission, such behaviours and practices may acquire normative significance within particular historical and environmental contexts, although their practical effectiveness does not in itself establish their moral justification.

Although ethics as a reflective discipline belongs to human cultural history, the behavioural dispositions underlying moral practices have deep evolutionary roots. Ethical systems emerge through the interaction of biological predispositions, social practices and cultural processes, rather than as the direct expression of a fixed biological programme. Patterns of cooperation, reciprocity and group-oriented conduct may become socially valued and, through learning and transmission, take on increasingly explicit normative significance. Over time, such practices may become increasingly codified in oral traditions and, subsequently, in written rules. In this limited sense, one may speak of an early or "primeval" ethics: not yet a fully articulated moral theory, but a repertoire of practices through which particular groups regulate conduct and sustain social life (Tomasello 2016; Thompson 2022).

These early forms of moral conduct should be understood as socially transmitted patterns of behaviour rather than as fully articulated ethical systems. Their biological basis does not mean that they are genetically fixed or uniform across groups. Alongside inherited dispositions and species-specific needs, ecological pressures, learning and culturally established expectations shape different ways of living together. Thus groups with comparable biological capacities may develop different practices in response to distinct environmental and social conditions.

With the emergence of Homo sapiens, previously acquired behavioural patterns were preserved and gradually transformed through processes of conceptualisation into explicitly recognised and consciously held values, subsequently expressed through language. This process lays the groundwork for the formation of protoethics. The development of language may have facilitated the transmission, negotiation and explicit formulation of socially significant practices; the precise evolutionary relations between linguistic capacities and moral norms, however, remain open to investigation (Tomasello 2016). In the protoethical phase, behaviours and attitudes acquire symbolic, semiotic and linguistic significance; in a later and more mature

© 2026 ARKETE. All Rights Reserved

phase, they become concepts and principles expressed in language, from which oral and written norms regulating a broad range of individual, interpersonal and collective practices are derived.

A further phase involves reflection on values articulated in language, social rules and legal norms. Ethical systems can then be understood as historically variable forms of social regulation that help coordinate conduct, manage conflict and sustain relationships among individuals, groups and other living beings. From a systemic perspective, these norms may contribute to the stability and continuity of social groups. Any comparison with the regulation of physical systems, however, remains analogical: normative order cannot be reduced directly to thermodynamic entropy. Ethical rules are developed and contested by agents situated within ecological and cultural environments; they are neither arbitrary creations detached from those environments nor imperatives literally issued by ecosystems.

The evolutionary emergence of ethical capacities is closely connected to the development of neural systems involved in emotion, learning, social cognition and behavioural regulation. These functions do not depend on distinct and independently operating cerebral structures, but arise from the coordinated activity of distributed and interconnected neural networks. Moral behaviour must therefore be understood in relation to the complex interaction between biological dispositions, individual experience and social and cultural environments.

Ethics, however, cannot be reduced to its neurobiological foundations. Moral values, judgements and norms emerge through processes of learning, linguistic articulation, social interaction and cultural transmission. Although these processes depend on the functioning of the nervous system, their normative significance cannot be explained solely in neurophysiological terms. Ethical life is thus a historically and culturally shaped phenomenon grounded in, but not reducible to, the biological organisation of the human species (May 2023).

3. The dominion of the human species: anthropocentrism and speciesism

The distinctive cognitive and technological capacities of Homo sapiens have enabled human populations to transform ecosystems on an unprecedented scale. This predominance should not, however, be understood as literal control or possession of the biosphere, nor does it imply that the capacities of other animals are confined to rigid survival programmes. From an evolutionary perspective, the history of the genus Homo involves multiple species and lineages; the contemporary global predominance discussed here concerns Homo sapiens specifically. Human culture and technology have amplified capacities that remain biologically grounded and ecologically constrained.

At a later stage of human evolution, biological predominance acquired an increasingly cultural and technological dimension. This development cannot be understood simply in terms of the domination of non-human animals, but must also be related to the growing awareness of human beings of their own capacities and of their ability to intervene deliberately in the physical and biological world. Culture is a major factor in

© 2026 ARKETE. All Rights Reserved

the predominance of Homo sapiens, but it also enables human beings to examine their position in the world and evaluate the consequences of their actions for other species and ecosystems. Through its distinctive cognitive capacities, the human species has acquired the ability to reflect not only on its own existence but also on the conditions of life of other species and on the organisation of the biosphere as a whole. Such awareness does not amount to complete knowledge or control of the living world.

These capacities afford human beings considerable, though always limited, freedom to alter their surroundings. Human populations do not merely adapt to environmental conditions: they also modify those conditions through technical, social and cultural practices. This capacity for deliberate and self-directed transformation should not be confused with autopoiesis, a concept that has a more specific meaning in theories of living systems. Human life is thus shaped by the continuous interaction of biological evolution, ecological constraints and historically situated human agency.

The human species is not merely a participant in evolutionary processes, but has also acquired the capacity to influence some of their outcomes through the conservation and genetic modification of existing species, the development of novel biological forms and attempts to recreate certain characteristics of extinct species. It cannot be said that the biosphere, or nature in general, is fixed. The organisation of living matter is not immutable but subject to continuous transformation.

Bioethics and neuroethics thus have complementary tasks. While bioethics examines the ethical implications of interventions in living systems, neuroethics focuses on questions arising from neuroscience and interventions affecting the brain and nervous system. Both fields can help evaluate the aims, consequences and responsibilities associated with humanity's growing ability to alter biological processes, including those affecting other species (May 2023).

In this framework, the relationship between human beings and other animal species becomes a central ethical question. Human capacities to understand, affect and sometimes protect other living beings create responsibilities that cannot be derived solely from human predominance. The issue is which relations between humans and non-human animals can be justified, and on what principles. To recognise specifically human capacities need not entail that only human interests count or that the interests of other animals may be disregarded.

As Peter Singer observes, most humans living in large cities only encounter other animals at mealtime. Even if one accepts a general superiority of human life over non-human life, this superiority cannot be justified by the mere fact of being a member of the species *Homo sapiens*. An attitude that privileges the interests of members of the human species and dismisses those of other species on the sole basis of species membership is defined as speciesism: an attitude similar to that of slave traders who exploited other human beings on the sole basis of their not belonging to the so-called "white race" (Singer 2023).

© 2026 ARKETE. All Rights Reserved

It may be argued that certain human capacities, such as self-awareness, abstract thought, the ability to formulate future projects and complex forms of communication, provide grounds for attributing particular moral significance to human life. Yet even if these aspects are significant, they are not a sufficient reason for denying the rights and interests of non-human animals.

Many maintain that human life is inviolable regardless of an individual's cognitive capacities, degree of autonomy or ability to communicate. This conviction raises complex ethical questions in cases involving severe cognitive impairments or profound dependence on medical support, particularly when decisions must be made concerning the continuation of life-sustaining treatment.

The question is whether species membership alone provides sufficient grounds for assigning different moral consideration to human and non-human beings when some of their morally relevant capacities are comparable. Some argue that membership of the species Homo sapiens is, in itself, sufficient to justify an unconditional entitlement to life. Yet the appeal to this supposed ontological distinction constitutes a speciesist position. In experiments, the results of which may benefit human health, it would then be permissible to kill a chimpanzee endowed with self-awareness that is capable of forming relationships and surviving autonomously, while it would not be permissible to withdraw life support from a non-autonomous human who is biologically incapable of surviving independently. From a perspective that prioritises comparable interests and capacities, this asymmetry requires ethical justification rather than an appeal to species membership alone (Singer 2023). Fasel (2024), however, offers a different proposal for the legal domain: extending fundamental rights to non-human animals through a species-membership approach, rather than grounding every entitlement in individual capacities.

Rejecting speciesism does not imply asserting that the lives of all animals have the same value. If we accept the principle of equal consideration of interests, it must extend to all sentient beings, insofar as their interests are morally relevant. In the words of Jeremy Bentham, the question is not whether animals can reason or speak, but whether they can suffer (Bentham 1789; Singer 2023; Rowlands 2025).

4. Human nature and normality

A central theme in Mariano Bianca's discussion of human nature (Bianca 2025) is the status of the characteristics by which the human species is identified. The expression "human nature" is often taken to indicate a stable set of biological traits that distinguishes human beings from other animals. Yet identifying characteristic features of a species does not establish that those features are immutable or independent of evolutionary, environmental and cultural processes.

Acceptance of the existence of human nature, in the sense of a stable set of genetic characteristics, is derived from a prejudice that Mariano Bianca identifies as naturalistic, namely the belief that there exists a nature

© 2026 ARKETE. All Rights Reserved

governed by inviolable and eternal laws, situated beyond and above human and biological history, as if the biosphere and ecosphere had a complete and definitive structure (Bianca 2025). This prejudice has an onto-theological foundation that gives rise to the notion of natural law, according to which a set of obligations, rights and duties is fixed by human nature. Human behaviour depends partly on the genetic heritage of the individual and the species, to which social and cultural factors must be added. If we approach the issue from a cultural point of view, it becomes evident that every human being is the result of history and culture, and that what one thinks and does is also shaped by historical-cultural factors. This is confirmed by the extraordinary variety of sexual customs, religious beliefs and social relationships of different cultures.

We cannot overlook the fact that each individual possesses a genetic heritage that contributes to the development of somatic traits and plays an important role in neurophysiological functioning, thereby influencing various mental capacities. However, equating the notion of human nature with the genetic heritage of the species does not entail endorsing the dogma of its immutability. If the genetic nature of the species is determined by ongoing biological evolution and is therefore the result of the biological history of the planet, then we cannot consider human nature immutable. Nature is characterised by impermanence, since it is subject to continuous transformation, especially by the human species. The fact that biological characteristics can change, however, does not by itself establish the legitimacy or desirability of deliberate interventions; that question requires independent ethical assessment.

The genetic nature of the human species (or, more precisely, the genome of *Homo sapiens*) is subject to continual change due to evolutionary processes, although its future trajectories cannot be predicted with certainty. Therefore, if the genetic make-up of human beings is contingent and still undergoing transformation, we cannot appeal to the supposed immutability of human nature to reject the possibility of deliberate intervention aimed at modifying its current biological constitution.

If the human genome is the result of an ongoing evolutionary process, its present configuration cannot be regarded as intrinsically immutable. However, the possibility of deliberately modifying human biological characteristics does not, in itself, establish the moral legitimacy of such interventions. Their justification requires independent ethical considerations concerning their purposes, risks, expected benefits and implications for both individuals and future generations. In particular, somatic interventions must be distinguished from heritable germline changes, whose consequences may extend beyond those directly involved in the decision.

Closely connected to the concepts of nature and human nature is the concept of normality. From an empirical standpoint, normality is often associated with statistical regularity. In order to satisfy the principle of cognitive economy (obtaining the greatest amount of information with the least cognitive effort), individuals tend to recognise regularities in the environment so as not to process afresh information already acquired.

© 2026 ARKETE. All Rights Reserved

Thus, what occurs regularly is generally regarded as normal, insofar as it conforms to custom and does not appear exceptional.

In many cases, the notion of normality overlaps with that of naturalness. For example, to say that smell is the "normal" function of the nose is equivalent to saying that it is its "natural" function, at least from the standpoint of ordinary or common-sense knowledge. But can moral value be attributed to normality? Does something considered normal or natural constitute a moral value, namely a state or condition regarded as desirable and used as a criterion for evaluating conduct?

In law, norms do not merely reflect established patterns of behaviour but may also contribute to defining and producing new standards of normality. One might say that a norm is a normative proposition that seeks to recognise and establish typical behaviour.

In philosophy, the term "normal" may be used in both descriptive and prescriptive senses. Descriptively, normality may refer to statistical regularities, although biological normality cannot be reduced to statistical averages, as Canguilhem (1991) has argued. Prescriptively, normality refers to what is deemed appropriate according to a given standard, identifying the models to which individuals are expected to conform in order to be considered "normal persons."

In ethics, normality consists in conformity to prescriptive patterns of conduct. Normality, when understood in its prescriptive sense, is therefore not simply a natural given but is also shaped by historical, social and cultural processes. Normative standards establish specific domains of normality, which may change as the practices and values of a society evolve.

Moreover, the claim that whatever is natural is intrinsically good is difficult to sustain. Natural processes may benefit some organisms while harming others; their occurrence does not, by itself, provide a moral justification for allowing them to proceed without intervention. For example, human susceptibility to infectious disease is natural, yet the use of antibiotics is not thereby rendered illegitimate. What counts as good or bad must be assessed in relation to relevant interests, consequences and values, rather than inferred from naturalness alone.

As Bianca observes, human survival has depended not only on biological adaptation but also on practices of environmental modification and protection (Bianca 2025). Although humans have undergone adaptive processes, without technological modifications of the natural world human survival would have been precarious. To maintain both predominance and survival, human beings must intervene in the biotic complex in which they live, which at times manifests its "adversity" through natural events of considerable violence. Nature is therefore neither good nor evil in itself; assessments of particular processes depend on their consequences for the interests and vulnerabilities of living beings. Nature cannot be considered intrinsically positive, for it unfolds independently of the various interests of living species.

© 2026 ARKETE. All Rights Reserved

5. The value and sacredness of life

The value attributed to life cannot be assessed independently of the living beings concerned and the relationships through which such value is recognised. This does not entail that only human life has moral significance, nor that the interests of non-human animals may be disregarded. Claims about the intrinsic value of life should therefore be distinguished from claims about the particular interests, capacities and forms of vulnerability of living beings. Human practices of using and killing other animals make this distinction especially pressing, since appeals to the value of life are often applied selectively (Burgat and Dardenne 2023; Rowlands 2025).

From an ethical point of view, this speciesist stance is problematic because the moral consideration of living beings cannot be determined solely by their membership of a particular species. The interests and capacities of different forms of life must be taken into account, without assuming that all living beings possess the same moral status. Although human life is universally considered an indisputable and non-negotiable value, this does not imply that it must always occupy the highest position in a hierarchy of values. Human life is primarily orientated towards biological survival, yet there may be circumstances in which other values—such as altruism, honour or faith—may take precedence. Such values may lead an individual to "violate" the principle of biological self-preservation. Decisions concerning one's own life raise fundamental questions of individual autonomy, while also requiring attention to decision-making capacity, the rights of others and the relevant legal and ethical context.

The moral significance of human life cannot be reduced to biological existence alone, but must also be considered in relation to the interests, capacities and forms of experience that characterise human beings. The distinctive capacities of human beings may contribute to the particular moral significance attributed to human life, but they cannot constitute the sole basis of its value, nor can their absence justify denying moral consideration to an individual.

What does it mean to assert that life is sacred? In religious terms, life is sacred because it participates in the sacredness of the transcendent and of the world itself. However, when the sacredness of life is interpreted as an absolute principle that places individual existence under the authority of a transcendent order, a tension may arise between the proclaimed inviolability of life and the autonomy of the individual. This tension becomes particularly evident when religious or institutional authorities claim the right to determine the conditions under which human life may be preserved or sacrificed. Those who administer the sacred and the divine may intervene in the lives of individuals in the name of orthodoxy and doctrine, even to the point of ending those lives, as happened throughout history during religious conflicts.

© 2026 ARKETE. All Rights Reserved

Such interpretations reveal a potential contradiction between the affirmation of life's absolute value and the attribution to external authorities of the power to determine its preservation or termination. The ethical significance of human life cannot therefore be adequately understood without considering the autonomy, dignity and interests of the individuals concerned.

6. Eugenics and posthumanity

Genetic technologies already allow targeted changes to DNA in research and in some clinical contexts, although their applications, safety and permissibility vary considerably. Somatic gene therapies must be distinguished from heritable genome editing and from human reproductive cloning, which cannot simply be treated as established clinical options. Genetic interventions may be directed at preventing disease or modifying traits, but the ethical evaluation of these purposes differs. Historically, "eugenics" refers primarily to efforts to influence the hereditary characteristics of human populations, often through coercive practices. Its application to genetic modification in other species or the biosphere would therefore be an unusually broad extension of the term and should not be confused with its conventional meaning.

The present state of the human species is the outcome of a contingent evolutionary process, shaped by interactions between life and the environment. Human beings have not only modified the world around them; they have modified themselves. Compared with previous generations, many human populations have experienced increases in life expectancy and average height, largely as a result of improvements in nutrition, healthcare and living conditions. These changes reflect the interaction between biological characteristics and environmental and cultural factors, rather than necessarily indicating hereditary genetic modifications. There is therefore continuity between what earlier generations accomplished through cultural adaptation and what current generations may now do through genetic intervention.

Human enhancement may involve different forms of technological intervention, including genetic modification, biomedical treatments and the integration of technological devices with biological functions. These approaches, however, must be distinguished, since genetic enhancement does not necessarily involve the incorporation of artificial components into the human organism. Genetic interventions may involve the identification of genes associated with particular biological functions, the modification of their expression or the editing of specific DNA sequences. However, many human characteristics, particularly complex cognitive and behavioural traits, depend on the interaction of multiple genes and environmental factors, making their deliberate modification especially challenging. Researchers already isolate genes and study their relationship to normal and pathological metabolic functions in order to develop increasingly targeted therapies.

Therapeutic genetic interventions are not identical to heritable germline modification: the latter raises distinctive questions because genetic changes may be transmitted to future generations. Their long-term

© 2026 ARKETE. All Rights Reserved

effects, including unintended consequences, remain uncertain. These uncertainties do not by themselves settle every ethical question about prospective interventions, but they require stringent scientific assessment and public deliberation. Nor should the possibility of accelerating a desired genetic change be mistaken for proof that it would be beneficial (Visscher et al. 2025; Nuffield Council on Bioethics 2018; World Health Organization 2021).

The discussion consequently turns from therapy to enhancement. The present biological characteristics of Homo sapiens are historically contingent rather than immutable, but this observation alone cannot show that deliberate enhancement is justified. As Buchanan (2011) has emphasized, the ethical assessment of biomedical enhancement requires consideration of its potential benefits, risks and implications for human well-being. The decisive question therefore concerns which interventions, under what conditions, could be ethically defensible (Jotterand and Ienca 2023).

Evolution should not be understood as a process that necessarily produces improvement. Adaptations arise under particular conditions, involve trade-offs and may become disadvantageous when environments change. Recognising the contingency and limitations of present biological characteristics leaves open the possibility of justified intervention, while providing no general presumption in its favour.

Francis Galton associated eugenics with the improvement of hereditary characteristics, a historical project whose coercive and discriminatory consequences cannot be overlooked. Contemporary genetic medicine and proposals for enhancement must therefore be assessed in terms that do not erase this history. Appeals to a supposedly fixed natural order do not, by themselves, rule out biological intervention; equally, rejecting such appeals does not establish that a proposed intervention is morally acceptable. Agar (2004) has defended a conception of liberal eugenics that distinguishes individual reproductive choices from the coercive practices historically associated with eugenic programmes. This perspective raises the question of whether reproductive autonomy can provide sufficient ethical justification for genetic interventions affecting future generations.

However, as Habermas (2003) warns, decisions about the traits of future persons may threaten their autonomy by imposing an externally chosen conception of what a person ought to be. The ethical assessment of genetic enhancement must distinguish technical feasibility from moral justification and consider consent where possible, fairness, access, risks, the interests of future generations and the possibility of social coercion. In particular, coercive biopolitics cannot be assimilated to voluntary, carefully regulated therapeutic interventions or to proposals for enhancement subject to independent ethical scrutiny (Jotterand and Ienca 2023).

Humanity may progressively acquire greater capacities to influence certain aspects of its biological future. Although the emergence of substantially modified human forms and the possibility of adaptation to extraterrestrial environments remain speculative, these prospects raise significant philosophical questions

© 2026 ARKETE. All Rights Reserved

concerning the boundaries of human nature and the ethical responsibilities associated with deliberate biological transformation. Such developments would not entail a predetermined progression towards a superior "new human". They demand careful consideration of the scientific uncertainties and the cultural, political and ethical implications of attempts to reshape human heredity and other living systems (Visscher et al. 2025).

Conclusion

The emergence of bioethics reflects the increasing capacity of the human species to intervene in its own biological development and in that of other living beings. Ethical systems, rooted in evolutionary and cultural history, have developed to regulate the expanding sphere of human action. Today, however, human agency extends beyond adaptation to encompass the deliberate transformation of biological processes.

To acknowledge this capacity is not to deny the risks involved. Human interventions in the biosphere can protect as well as damage other forms of life, and they must be judged by their consequences and justifications rather than by the mere fact of technological possibility. If human nature is not fixed, certain characteristics may be modified; whether they ought to be modified is a distinct question. A responsible bioethics must therefore consider ecological interdependence, interspecies interests, justice and the interests of generations yet to come.

To be human is not merely to inherit a biological condition, but also to possess the capacity to reflect upon and transform it. The future of the human species is therefore neither entirely determined by natural evolution nor freely available to technological intervention. It emerges from the interaction between biological possibilities, cultural choices and ethical responsibilities. Bioethics provides a critical framework for assessing the legitimacy and consequences of humanity's growing capacity to shape its own biological future.

© 2026 ARKETE. All Rights Reserved

References

Bentham, J. (1789) *An Introduction to the Principles of Morals and Legislation.* London: T. Payne and Son.

Bianca, M. L. (2025) *Humans and Their Nature*. Newcastle upon Tyne: Cambridge Scholars Publishing.

Buchanan, A. (2011) *Beyond Humanity? The Ethics of Biomedical Enhancement*. Oxford: Oxford University Press.

Burgat, F. and Dardenne, E. (eds.) (2023) *Animal Suffering: The Ethics and Politics of Animal Lives.* London: ISTE.

Canguilhem, G. (1991) *The Normal and the Pathological*. New York: Zone Books.

Fasel, R. N. (2024). *More Equal Than Others: Humans and the Rights of Other Animals.* Oxford: Oxford University Press.

Habermas, J. (2003) *The Future of Human Nature.* Cambridge: Polity.

Jahr, F. (1927) 'Bio-Ethik: Eine Umschau über die ethischen Beziehungen des Menschen zu Tier und Pflanze'. *Kosmos*, 24, 1, 2–4.

Jotterand, F. and Ienca, M. (eds.) (2023) *The Routledge Handbook of the Ethics of Human Enhancement.* London: Routledge.

May, J. (2023) *Neuroethics: Agency in the Age of Brain Science.* Oxford: Oxford University Press.

Nuffield Council on Bioethics (2018). *Genome Editing and Human Reproduction: Social and Ethical Issues.* London: Nuffield Council on Bioethics.

Potter, V. R. (1971) *Bioethics: Bridge to the Future.* Englewood Cliffs, NJ: Prentice-Hall.

Rowlands, M. (2025) *Animal Rights.* Cambridge, MA: MIT Press.

Singer, P. (2023) *Animal Liberation Now: The Definitive Classic Renewed.* New York: Harper.

Thompson, R. P. (2022) *Evolution, Morality and the Fabric of Society.* Cambridge: Cambridge University Press.

Tomasello, M. (2016) *A Natural History of Human Morality.* Cambridge, MA: Harvard University Press.

Visscher, P. M., Gyngell, C., Yengo, L. and Savulescu, J. (2025) 'Heritable Polygenic Editing: The Next Frontier in Genomic Medicine?'. *Nature*, 637, 637–645. https://doi.org/10.1038/s41586-024-08300-4

World Health Organization (2021) *Human Genome Editing: A Framework for Governance.* Geneva: World Health Organization.

© 2026 ARKETE. All Rights Reserved