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Transhumanism Between the Ethics of Technoscience and the Challenge of Human Enhancement: A Comparative Study of Gilbert Hottois and Nick Bostrom

[1] Zebbich Wissame *, Dehdouh Rachid[2]

[1] University of Constantine 02. Abdelhamid Mehri (Algeria)

[2] University of Constantine 02. Abdelhamid Mehri (Algeria)

Abstract: This article examines the philosophical and ethical foundations of transhumanism in Gilbert Hottois and Nick Bostrom, focusing on the legitimacy and limits of technoscientific intervention in human nature. The comparison is not confined to particular enhancement technologies; it addresses competing conceptions of the human, the normative status of nature, and the place of technology in shaping future identities and capacities. Hottois approaches transhumanism through technoscience and pluralistic bioethics, with particular attention to ethical accompaniment, institutional deliberation, and revisability. Bostrom gives greater weight to individual freedom, enhancement, and the possible value of posthuman forms of life. Through a close reading of primary texts, the article compares their positions on enhancement, autonomy, dignity, risk, and justice. Both reject treating present human biology as a final moral norm, yet they differ in how they justify transformation: Hottois stresses pluralistic governance and ethical mediation, whereas Bostrom foregrounds choice and the exploration of posthuman value.

Keywords: Gilbert Hottois, Nick Bostrom, Transhumanism, Posthuman, Technoscience, Human Enhancement, Bioethics.

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Introduction

Transhumanism pushes ethical philosophy toward a form of questioning that goes beyond the mere use of technology, for the human being itself becomes a possible object of reshaping. Biotechnology, genetic engineering, neural interfaces, artificial intelligence, and anti-aging therapies touch upon bodily, cognitive, and affective capacities—precisely the dimensions that constitute the human being's image of itself. Inquiry therefore turns to the kind of being we might become, and to the criteria that distinguish an enhancement that widens human possibilities from a transformation that touches the very conditions of recognition, equality, and identity.[1]

Bostrom traces the modern roots of transhumanism to a long history of the idea of humanity's self-fashioning, and to rationalist humanism, which granted knowledge and technology a liberating function; the idea then acquired a more radical content with Darwinism and the advances of biology, medicine, and computing.[2] This trajectory shifts the project of enhancement away from education and institutions alone toward the human being itself: the body and its capacities become a field open to revision and modification, and human nature becomes a "work in progress" rather than a final limit on development.[3]

Hottois gives this shift a distinctive philosophical significance through the concept of technoscience, in which knowledge interweaves with technical action, and the capacity to describe turns into a capacity to produce and alter facts. This perspective opens the question of the human onto a temporality that exceeds the short span of political history, and reinserts the human species within the course of biological and technical evolution. Transhumanism thus becomes a test of contemporary humanity's capacity to

assimilate the Darwinian revolution and the technoscientific revolutions while maintaining a critical distance from both determinism and conservative rejection of change.[4-5]

Bostrom formulates his position from within a transhumanist movement whose normative commitments are more explicit. He defines it as an orientation that affirms both the possibility and the desirability of improving the human condition through applied reason and technologies that expand health, intelligence, and physical and psychological capacities, while taking ethical and political risks into account. He adds that the present human being is an open stage in the course of evolution, and that its value lies in its capacity to shape its own life and expand its possibilities rather than in any fixed biological form.[6] On this view, value is determined by the human being's capacity to choose a life and expand its possibilities in accordance with values deemed worth realizing, rather than by its present biological form.[7]

The study proceeds from the following problem: **How do Gilbert Hottois and Nick Bostrom, philosophically and ethically, ground the possibility of transcending the biological limits of the human being, and to what extent does their divergence in understanding technoscience and human enhancement reveal two different conceptions of humanity's future and of the limits of legitimacy in transhumanist transformation?** From this problem branch further questions concerning the concept of human nature, the value of enhancement, autonomy, dignity, justice, and risk, as well as the place of bioethics in organizing the passage from technical possibility to ethical project.

The study adopts a comparative analytical method that sets Hottois's texts on humanism, technoscience, and bioethics against the texts that found Bostrom's position. It avoids assuming any direct influence not supported by the texts themselves, while noting that Hottois explicitly discusses Bostrom in more than one place. The comparison shows agreement in rejecting anthropological rigidity, but reveals a divergence in how legitimacy is constructed: a pluralistic technoscientific "accompaniment" in Hottois, against a forward-looking liberal defense of self-expansion in Bostrom.[8]

Terminological Clarifications and the Limits of the Comparison

The comparison requires distinguishing between "transhumanism" and "posthumanism." The former here refers to a project that makes transcending certain biological limits a possible goal through science and technology, while "posthuman" refers to modes of existence that exceed the capacities of the present human being to a degree that makes their inclusion within ordinary biological categories ambiguous. The boundary between the two remains fluid, since the transition may occur gradually through small improvements in health, memory, and affect. Hottois himself notes the looseness of these boundaries and the difficulty of predicting them, so that the terms become tools of analysis rather than final ontological classifications.[9-10]

The analysis requires distinguishing three levels that are frequently conflated in public debate: technical possibility, the value of what it makes available, and the political legitimacy of its use. The question of our capacity to extend life or modify genes differs from the question of the moral value of such capacities, and both differ from questions of decision, distribution, and risk-bearing. Bostrom tends to begin from the value of certain capacities and then move to the conditions of their fair and safe availability, whereas Hottois treats all three levels from within the structure of technoscience itself. This distinction prevents conflating technical disagreement with moral disagreement, and prevents denying scientific transformation merely because of value-based objections to it.[11]

The term "enhancement" carries an implicit positive judgment, which calls for cautious use. An increase in capacity may come at a cost to justice, autonomy, or diversity; the term is therefore used here in a functional sense: an intervention intended to expand a capacity beyond the mere restoration of a lost function, while leaving its moral value an open question. This clarification allows Hottois and Bostrom to be read without presupposing the conclusion in advance, and returns the discussion to the relation between capacity and meaning rather than reducing it to technical achievement.[12]

Part One: From Humanism To Transhumanism: Conceptual And Historical Foundations

1. Transhumanism as a Critical Extension of Modern Humanism

The history of transhumanism displays a paradox that is not easily dispelled: it proclaims the transcendence of the human, yet draws a significant part of its project from modern humanism. Bostrom

links this legacy to the rationalism of the Renaissance and the Enlightenment and to the idea of the human capacity for self-formation through knowledge; he then sees in Darwinism a step that allowed the human to be thought of as an evolutionary stage rather than a final conclusion. On this account, transhumanism retains a clear connection to modern humanism, but transfers some of its promises to the biological and technical domain.[13-14]

The meaning of enhancement changes radically when it moves from the symbolic and social sphere to organic and neural structure. Education, moral cultivation, and just institutions represented classical forms of human improvement; transhumanism then added direct material means such as genetic modification, drugs that enhance memory and attention, neural interfaces, and life-extension technologies. These means add to education and social reform the possibility of direct intervention in bodily and neural structure.[15-16]

Hottois approaches this extension with greater caution, holding that certain European formulations of humanism still carry an implicit image of the human that predates Darwinism: they accept the improvement of environment and institutions, yet hesitate once the body and brain themselves become a field for technology.[17] This hesitation reveals where the real disagreement lies: where does the human right to alter the conditions of one's own existence end? Is it confined to environment and institutions, or does it extend to the body and neural capacities? Hottois leaves the question open, making judgment depend on an analysis of ends, effects, and choices in each case rather than referring it to a fixed essence prior to debate.[18]

Bostrom starts from a similar rejection of fixing the present image of the human. In the Transhumanist FAQ, he links human value to aspirations, experiences, quality of life, and the capacity to shape one's own course, rather than to bodily form and biological detail. A direct consequence follows: insofar as human value does not coincide with present biological structure, changing that structure does not in itself entail a loss of humanity or dignity.[19-20]

2. From Natural Evolution to Technoscientific Evolution

Evolution grants transhumanism a distinctive temporal horizon. Once thought moves from the centuries of political history to the millions of years by which biological evolution is measured, the possibility of forms of life and mind different from the present human becomes part of the philosophical question. Hottois holds that the Darwinian revolution and technoscientific transformations shifted the image of the human species from a fixed entity to a transient form within a broader process, opening the future onto possibilities that traditional anthropology does not easily accommodate.[21-22]

Bostrom draws on this horizon to read the history of transhumanism as a passage from symbolic wishing to a researchable technical project. The desire for longevity and expanded capacities is ancient, but its present association with genome editing, memory support, and the slowing of aging gives it a different status. Transhumanism encompasses, alongside radical scenarios such as mind uploading or technological singularity, forms of enhancement that have already entered medicine and digital technology.[23-24]

Hottois treats with caution any reading of evolution as a guaranteed ascending path toward a "better human." The evolutionary paradigm is powerful in the possibilities it opens, and dangerous when it turns into an automatic justification for every possible change.[25] This reservation keeps the field of enhancement open while keeping technical progress separate from moral judgment on its outcomes. For Hottois, the question of "the better" remains political and bioethical, one that the laboratory alone cannot settle.[26]

Bostrom approaches the matter from a related angle when he acknowledges that transhumanism does not rest on blind technological optimism. He recognizes the possibility of deepening inequality, undermining certain relationships, and the emergence of catastrophic risks, and regards understanding and limiting these dangers as part of the project itself.[27] He parts ways with conservative positions in the kind of response he proposes: risks call for regulation, knowledge, and protection, whereas a blanket ban deprives society of uses that might be beneficial.[28]

3. Enhancement: From Therapy to the Reformulation of Human Possibility

The concept of **Enhancement** opens onto the most sensitive area of the debate, because the boundary between therapy and enhancement is unstable. Therapy restores a lost or impaired function according to a familiar medical standard, whereas enhancement seeks to exceed the normal or usual level. Yet this dichotomy collapses in many cases: is strengthening immunity an enhancement or a therapy? Is slowing

aging a treatment of a pathological process or a modification of a natural condition? Is improving the memory of a healthy person an illegitimate expansion of medicine's domain, or an extension of the project of education?[29]

Hottois is reluctant to turn the distinction between therapy and enhancement into an absolute moral barrier. Analysis of contemporary cases reveals a continuity between the two domains, and he therefore shifts judgment onto ends, outcomes, risks, and justice rather than suspending it on the name of the intervention alone.[30] This approach keeps bioethics close to the facts, since many technologies begin as therapeutic and then expand into enhancement uses, and the reverse trajectory may also occur.[31]

Bostrom pushes the argument a step further by granting the exploration of the posthuman domain an independent transhumanist value. Present human structure, in his view, confines our experience and capacities to a narrow range, and there may exist modes of consciousness, knowledge, and affect whose value we are presently unable to assess because we lack the cognitive structure needed to experience them.[32] This conception reverses the burden of proof: rather than resting content with the question "why should we change the human?", it imposes the counter-question, "why should we believe that our present limits represent the utmost we deserve to be?"[33]

This defense nonetheless preserves the value of the present human being. Bostrom insists that posthuman values may be an extension of our present values rather than their replacement, and that expanded capacity can allow the realization of values we already desire, such as health, understanding, creativity, love, and autonomy.[34] This point clarifies transhumanism's connection to the humanist legacy: the legitimacy of enhancement rests on the values it serves, not on the novelty of the technical means.[35]

Part Two: Gilbert Hottois: Technoscience And Evolutionary Humanism

1. Technoscience as a Condition for Understanding Human Transformation

Hottois closely links his conception of transhumanism to the concept of technoscience. Modern science, in his view, unites description with action, and operates within a network of knowledge, apparatuses, and institutions capable of transforming its own object. This shift gains added significance once the human being itself becomes an object of technical action, for the distance between knower and known contracts: the human being fashions the means that, in turn, reshape its body, brain, and environment.[36]

The importance of this perspective becomes clear once technology enters into the very constitution of the human, becoming part of its history rather than remaining an external tool added onto it. Technology enters the history of humanity's own formation, expanding its senses, memory, and capacity for work and communication. It is therefore difficult, for Hottois, to defend a "pure human nature" untouched by technology. Language, writing, medicine, the machine, and the institution are all technologies in the broad sense, and what biotechnology and digital interfaces do today is accelerate and intensify an ancient logic in the human being's relation to itself.[37]

This conception leads to the concept of **Species Technica**, the technical species, which Hottois uses to envisage a human being that continues its evolution through technical media rather than awaiting spontaneous biological transformation. Later studies of his intellectual trajectory have highlighted that this concept links his early interest in science fiction to his work in the philosophy of technology and subsequently to bioethics and transhumanism, showing that the question of the future remained present in his project well before transhumanism became an explicit theme for him.[38-39]

The concept of the "technical species" indicates the entry of technology into the course of human evolution, while leaving the transition to the posthuman an open possibility rather than a deterministic path. This distinction carries philosophical weight, since Hottois rejects determinism just as he rejects closure. The future remains open, and politics, ethics, and culture all participate in directing what will become possible and acceptable.[40]

2. Evolutionary Humanism and the Reconsideration of the Concept of Nature

Hottois names the conception capable of assimilating evolution and technoscience "evolutionary humanism." This conception refuses to freeze the human within a final metaphysical definition, and treats its present image as both a historical and a natural stage at once. He therefore believes that a humanism which ignores Darwinism and the technoscientific revolutions risks turning into a conservative discourse

that protects an outdated image of the human rather than protecting humanist values capable of enduring into the future.[41-42]

This idea becomes clear in Hottois's discussion of Bostrom's account of transhumanism. He recovers the historical roots that Bostrom highlights, then focuses on the elements of rationalism, freedom, tolerance, democracy, autonomy, and the rejection of narrow moral speciesism. He notes that transhumanism recognizes itself within the traditions of modern humanism, with one essential difference: it permits the use of new technical means to expand the human rather than confining progress to education and social reform.[43-44]

On this basis, Hottois separates the fact that something is natural from its normative value. A natural given may carry disease, disability, and suffering just as it carries useful functions. Wisdom here consists in analyzing what deserves to be preserved and what may be improved, without reducing the human being to an engineering project. For this reason, he warns against two opposed tendencies: a conservative naturalism that regards every intervention as a betrayal of the human, and a radical technicism that regards every removable constraint as a defect to be overcome.[45]

3. Pluralism and Bioethics as an Accompaniment to Transformation

Hottois separates the pace of technical innovation from the standard of its moral success, which distances his position from promotional formulations of transhumanism. Here the concept of ethical "accompaniment" emerges: bioethics must evolve alongside technology and remain capable of revising its boundaries as knowledge and risks change. This stance is consistent with his broader philosophy, which rejects final solutions and grants pluralistic debate an essential function.[46]

Pluralism operates on two levels in Hottois's thought. The first is epistemic, since new issues require medicine, biology, law, philosophy, and the social sciences. The second is evaluative, since democratic societies contain within them a plurality of conceptions of the good and of human nature. The philosopher therefore works within this plurality without occupying a position above it, while technical possibility remains distinct from moral obligation. Legitimate decision is formed through the interaction of expertise, argument, interest, and rights.[47]

The implications of this conception become clear in the matter of enhancement. The choice to use technologies for improving memory, physical capacities, or genetic makeup affects the individual, but it may also alter patterns of competition, distribution, and social recognition. Hottois therefore links individual freedom to the need for mechanisms that prevent exclusion and widen democratic access to benefits, and he insists that the risks of inequality call for just policies rather than automatically leading to a halt in development, provided such risks can be addressed through just policies.[48-49]

Hottois's position culminates in a conditional openness: he rejects any principled ban on enhancement, while equally rejecting the transformation of transhumanism into a one-dimensional ideology of progress. In the conclusion of his article "Humanism, Transhumanism, Posthumanism," he ties acceptance of the idea to its capacity to assimilate technoscientific transformations without denying their risks, holding that a "well-understood transhumanism" may represent a progressive humanism able to absorb these revolutions both theoretically and practically.[50-51]

Part Three: Nick Bostrom: Enhancement And The Exploration Of Posthuman Values

1. The Present Human As A Stage, Not An End

Bostrom starts from a clear premise: the present human being is not the final stage of possible evolution. This premise frees the present image of the human from the status of a normative endpoint, without thereby granting technical transformation any pre-established moral value. At this point, the normative question becomes whether certain future transformations are capable of producing a better life, rather than whether they preserve an inherited biological model.[52]

Bostrom defines the posthuman as possessing at least one central capacity that greatly exceeds the maximum the present human can achieve without new technical means. He focuses on three domains: healthspan, cognitive capacity, and emotional capacity.[53] This formulation allows a move away from the fictional image of the machine-being, since a posthuman may simply be a biological human whose health, intelligence, and range of experience have been greatly improved.[54]

Bostrom advances two interrelated theses: that there exist posthuman modes that could be of high value, and that the transformation of present humans into some of these modes could be good for them.[55] Bostrom confines his claim to the possibility of valuable posthuman modes existing, without generalizing superiority or turning transformation into an obligation. The argument draws its strength from its modal character: the existence of poor versions of the posthuman does not suffice to judge the whole field, just as the worst versions of human life do not exhaust its possible value.[56]

2. Autonomy and Morphological Freedom

Autonomy occupies a central position in Bostrom's ethics. In his general definition of transhumanism, he emphasizes that progress means expanding people's capacity to shape their lives and relationships in accordance with their deep values, and that a good society should allow those who wish to use enhancement to do so, and those who reject it to remain without enhancement.[57] Freedom here extends from the choice of a way of life to the choice of certain characteristics of body and mind.[58]

Bostrom terms this orientation "morphological freedom," linking it also to reproductive freedom. In his defense of posthuman dignity, he argues that protecting society from "Brave New World" scenarios is not achieved by granting the state comprehensive authority over technology, but by defending the freedom of persons and families while regulating tangible harms.[59] The state retains a role in protecting others from harm, not in imposing a single model of human nature.[60]

The position carries a clear liberal dimension, yet its consequences extend beyond the bounds of individual choice. Enhancement decisions may produce collective effects that place freedom itself under pressure: if memory enhancement becomes an unspoken condition for educational competition, how much freedom remains in refusing it? And if life-extension technologies remain costly, the possibility of choice may turn into a class privilege. Bostrom acknowledges these risks and seeks to address them through social and distributive policies rather than a general ban.[61-62]

3. Posthuman Dignity

The confrontation with bioconservatism reaches its peak in the concept of dignity. Bostrom distinguishes between dignity as a moral standing that requires a minimum of respect, and dignity as a quality or excellence that can appear in degrees. He holds that both senses can apply to posthuman beings.[63] This distinction frees dignity from an exclusive tie to membership in the species Homo sapiens.[64]

Bostrom thereby opposes a conception that ties moral value to a fixed, essential human "factor." Adding new beings possessed of consciousness and high capacities to the circle of moral recognition does not entail diminishing the dignity of present human beings, just as the moral circle has historically expanded to include groups once excluded, without that lowering the standing of others.[65] Dignity here appears expandable rather than a finite resource.[66]

This idea allows for a more precise reading of the difference with Hottois. Hottois too rejects closed moral speciesism, and accepts the possibility of granting value and respect to conscious beings that are non-human or posthuman.[67] But Bostrom formulates the argument within a more directly rights-based framework, whereas Hottois situates it within a broader critique of human centrality and within the necessity of adapting humanism to technoscientific development.[68]

4. Risk, Justice, and Limits

Bostrom extends transhumanism beyond individual freedom. In the FAQ, he acknowledges that technologies may benefit the wealthy first and may carry social and existential risks, but he defends the principle of widening access rather than halting innovation.[69] He holds that technological inequality is not an inevitable outcome, since public policy can widen access, limit monopoly, and protect individuals from coercive use.[70]

This conception also appears in his position on genetic engineering. He regards fears about turning the child into a "product," or about undermining unconditional parental acceptance, as worthy of debate, but refuses to treat them as established facts. He calls for weighing them against potential benefits such as disease prevention and the expansion of basic capacities, while preserving a regulatory space that prevents actual harm.[71-72]

The difficulty in Bostrom's conception emerges when moving from individual freedom of choice to structural justice. The market does not automatically distribute technology according to need, and

enhancement itself may change the rules of competition. At this point, the specific contribution of Hottois becomes clear: his pluralism includes the existence of institutions that discuss the interests of the vulnerable, the absent, and future generations, and that monitor the conversion of technical power into unreviewable social power.[73]

Part Four: The Philosophical Comparison: From Human Enhancement To The Question Of The Future

1. Points of Convergence: The Rejection of a Closed Humanity

The intersection between Hottois and Bostrom begins with a shared rejection of turning the present biological condition into a final standard. Both hold that the human being is the product of natural, cultural, and technical history, and that evolution does not stop at the boundaries of the present species. It follows that an appeal to "the natural" alone against intervention is rejected, since nature carries what we consider diseases, suffering, and deficiencies just as much as it carries useful functions.[74]

The convergence extends to the defense of autonomy. Hottois retrieves from the transhumanist movement the centrality of the person's freedom to modify their body, together with the right to refuse enhancement, while Bostrom makes this freedom one of the project's fundamental standards.[75] Neither imposes mandatory enhancement, though both reject letting conservatism become a power that deprives others of beneficial choices simply because they alter the familiar.

They also agree in rejecting technophobia. Hottois acknowledges that the evolutionary paradigm carries real dangers, but does not regard a return to the past as a convincing answer. Bostrom likewise affirms that risk does not prove that a blanket ban is the solution, since technology itself may be part of addressing the risks produced by less mature stages of development.[76-77]

2. First Difference: The Place of Philosophy within the Transhumanist Movement

Bostrom speaks from within the transhumanist movement rather than about it from outside. He contributed to shaping its definitions and principles, and his texts therefore carry a clear foundational and programmatic function: widening choices, developing safe technologies, protecting freedom, and exploring possible values beyond present limits.[78]

Hottois, by contrast, maintains a greater critical distance. He is sympathetic to transhumanism, but treats it as a "cloud" of tendencies rather than a homogeneous doctrine. This distance reveals his philosophical sensitivity toward plurality, and prevents him from reducing the future of the human to a single plan. He is therefore interested in transhumanism to the extent that it reveals the crisis of traditional humanism and the difficulty of representing the future within a technoscientific civilization.[79]

The difference appears more clearly in how legitimacy is constructed. For Bostrom, legitimacy starts from personal freedom and from the possibility that certain enhanced capacities may be valuable, after which policy is asked to reduce risk and widen access. For Hottois, legitimacy arises in a more deliberative manner: technology enters a network of values, institutions, and cultures, and decision therefore requires a multidisciplinary, revisable accompaniment.

3. Second Difference: Posthuman Values and the Limits of Imagination

Bostrom grants the future a strong exploratory value, assuming the possible existence of modes of experience we cannot yet assess because we do not yet possess the requisite cognitive capacity. He therefore defends keeping the "value space" open to future beings of greater capacity.[80] This idea lends his project philosophical boldness, while at the same time confronting him with a difficult normative question: how do we choose a path toward values we do not yet know?[81]

Bostrom answers partly through gradualism, the preservation of identity, and choice. Transformation is not a blind leap into an unknown being, but can proceed through gradual improvements in health, knowledge, and affect, with outcomes monitored along the way. Yet his conception of future values remains more optimistic than that of Hottois, who prefers to keep the question open and not to build the legitimacy of the present on promises that are difficult to test.

The Hottoisian position grants openness to the future a conditional value, since the future does not by itself supply a standard of judgment. "The better" requires argumentation in the present, together with ongoing revision as circumstances change. On this conception, bioethics functions as a mediator between Bostrom's exploratory vision and the political need for definite decisions at a definite time.

4. Third Difference: The Individual, Society, and Future Generations

The individual is at the forefront of Bostrom's discourse, even when the discussion is widened to society. Morphological and reproductive freedom both begin from the decision-maker and are then constrained by the harm principle. This structure grants strong protection against coercion, but faces difficulty when effects are diffuse and indirect, as in shifting competitive standards, market pressure, or heritable genetic modification.[82]

Hottois gives the institutional level a more prominent presence. His bioethical philosophy took shape in close contact with committees and multidisciplinary debate, which made him more attentive to the fact that technoscientific decision does not issue from an independent individual alone, but from systems of funding, research, economics, and law. The question thus becomes: who holds the capacity to choose? Who bears the risks? Who represents the generations not yet born?

The difference in starting point allows for a partial synthesis of the two positions without erasing the tension between them. Bostrom's autonomy protects the individual from state tyranny exercised in the name of the "natural human," while Hottois's institutional accompaniment limits the transformation of autonomy into a privilege tied to money and knowledge. Combining the two elements leads to a more balanced conception: freedom in enhancement tied to justice of access, transparency of risk, the possibility of objection, and protection for those who cannot take part in the decision.

5. Is Transhumanism an Extension of Humanism or a Departure from It?

This question returns the discussion to the meaning of humanism itself. If humanism is defined as the protection of the present form of Homo sapiens, then every radical transition appears as a threat. If, instead, it is defined by values such as rationality, freedom, tolerance, the alleviation of suffering, and the expansion of people's possibilities, then transhumanism can appear as an extension of the humanist project.[83]

Bostrom clearly favors the second definition. He regards transhumanism as an extension of secular Enlightenment humanism, and holds that improving body and mind is not a betrayal of humanity so long as it expands the capacity to realize values.[84] Hottois arrives at a similar conclusion when he holds that a well-understood transhumanism may be a progressive humanism capable of assimilating the technoscientific revolution, though he insists that this extension remains conditional on pluralism, justice, and the refusal to reduce the future to a single material development.[85]

The comparison reveals a shift in the concept of "the human" from a biological species designation to a normative horizon. The question becomes less about whether a future being matches our present image, and more about its capacity for recognition, freedom, relationship, and value. This shift allows moral consideration to be widened without turning present biology into an absolute limit.

6. Toward a Composite Standard of Legitimacy for Enhancement

From this comparison, the study derives a composite standard that draws on both positions without forcibly merging them. This standard begins with the value of the capacity that enhancement seeks to widen, such that it is tied to health, knowledge, or autonomy rather than to a mere increase in performance within a competitive context. It further requires the voluntariness of participation and the protection of the right to refuse, and adds the assessment of risks and long-term effects, especially in heritable or hard-to-reverse changes.

Legitimacy further requires a condition of justice in access, since an enhancement that widens a permanent gap between groups may undermine the very freedom it claims to protect. Major decisions require public debate and the possibility of revision, given how rapidly technoscientific knowledge changes; the future should likewise be kept open, so that present generations do not finally determine the kind of being their descendants must become, nor deprive them in advance of beneficial possibilities.

These conditions lean toward the spirit of Hottois, while remaining consistent with Bostrom's defense of enhancement when it is bound up with choice and harm limitation. The discussion thereby shifts from the dichotomy of the "bioconservative" and the "techno-enthusiast" toward a more precise question: which enhancement, for whom, under what conditions and institutions, and according to what conception of justice and the future?

7. Technical Freedom and Shared Responsibility: Testing Legitimacy in the Public Sphere

The move from the possibility of enhancement to its legitimacy reveals that technical freedom operates within a specific social structure. An individual's decision to undergo genetic modification, memory enhancement, or life extension connects to systems of research, funding, insurance, market, and law, and may reshape the standards of success, health, and capacity. Bostrom himself draws attention to this institutional layer when he widens the concept of transhumanism to include, alongside medicine and devices, the economic, social, and cultural arrangements that determine opportunities to benefit from technologies.[86] The defense of freedom to enhance remains incomplete if it overlooks the actual conditions of choice and the groups that may bear the risks of innovation before its benefits reach them.[87]

The matter grows more complex in reproductive genetic engineering, since the direct beneficiary of the decision is a person who has not yet entered the space of choice. Bostrom refuses to turn this difficulty into a general ground for prohibition, but acknowledges an independent interest of the future child that justifies preventing harmful or highly risky modifications, while also leaving room to support basic enhancements when disparities in material means would otherwise deprive some children of them.[88] This position reflects a liberalism constrained by a demand for protection: the family retains a wide space of decision, while it is acknowledged that parental autonomy does not exhaust all moral considerations. This shifts the debate from the slogan of "morphological freedom" to a more precise question about how the authority to decide the future is distributed among parents, medical institutions, the state, and the person whose life conditions will be shaped before they can express their own will.

Hottois widens the question by linking technical choices to pluralism. Modern society contains differing conceptions of the good life and human perfection, so that imposing a single standardized model of enhancement risks becoming a form of domination, just as an absolute ban risks becoming an opposing form of domination. Hottois places the possibility of bodily modification and the right to abstain from modification within a single horizon governed by the values of tolerance, democracy, and solidarity.[89] This formulation reads the ethics accompanying technoscience as a protection of the plurality of life projects: making choices available while safeguarding the right of refusal, and preventing new technology from turning into a social standard that defines the "acceptable human" according to a given level of performance, age, or intelligence.

Justice here extends beyond financial distribution to encompass the conditions of mutual recognition. The spread of a given enhancement may raise the social baseline, so that those who refuse to use it find themselves at a competitive disadvantage even though abstention was their free choice. Bostrom addresses this problem by distinguishing between enhancements that produce intrinsic or positive social benefits, such as certain forms of health improvement, and positional enhancements whose value derives mainly from outperforming others.[90] This distinction helps formulate a more precise ethical policy, since the object of judgment becomes the kind of good the technology produces and its external effects, rather than merely labeling it as "enhancement." Some interventions may deserve encouragement or public support, while others require regulation to prevent a competitive race that consumes resources without any real increase in shared welfare.

Hottois's philosophy introduces the element of time and uncertainty into this analysis. Technoscientific innovation may produce effects difficult to foresee prior to implementation, and may, years later, redefine the very moral problem at stake. The revisability of decisions therefore acquires central value: authorization remains tied to the state of knowledge, the balance of risks and benefits, and the social agreements prevailing at a given moment. This is consistent with Hottois's defense of a "well-understood" transhumanism that assimilates the technoscientific revolution without turning the future into a closed program. [91-92]

The comparison leads to a conception of shared responsibility that ties individual freedom to the institutional structure that makes its exercise possible. Bostrom offers tools for determining the value of new capacities and protecting personal freedom and the interests of future generations, while Hottois gives greater weight to dialogue among fields of expertise, to cultural plurality, and to the historicity of norms. Without fusing the two positions into a third doctrine, one can draw out conditions that make technical expansion defensible: meaningful benefit to the person, justice of access, protection from coercion and

discrimination, representation of the interests of those who cannot take part in the decision, oversight of collective effects, and the revisability of the rule as knowledge changes. The discussion of transhumanism then becomes a discussion of a future that ought to be justifiable before those who differ from us and those affected by its outcomes.

Conclusion

The comparison between Gilbert Hottois and Nick Bostrom reveals that transhumanism is not a homogeneous technical project, but a philosophical field within which different conceptions of the human and its future compete. The two philosophers agree in refusing to grant present human nature a normative sanctity that would make every modification an assault, and in accepting that technology can widen the domains of health, knowledge, and autonomy. They also share an evolutionary conception that makes Homo sapiens a stage in a long history, while moral progress remains independent of the mere technical possibility of change.

Bostrom defends enhancement with greater clarity, granting the exploration of posthuman values a potential worth and placing morphological freedom and autonomy at the heart of the individual's determination of their own future. His theory of dignity extends to future beings that may differ from us biologically, so long as they possess personhood, consciousness, and the possibility of a life of value.

Hottois situates transhumanism within the philosophy of technoscience and bioethics, treating it as an object of critical accompaniment rather than formulating it as a ready-made doctrine for the future. He refuses to fix an outdated image of the human just as he refuses to turn technical development into a normative judgment in itself, and ties openness to enhancement to pluralism, institutions, justice, and the revisability of decisions.

The study proposes that the most important difference between the two philosophers begins at their point of departure: **Bostrom begins from the human being's right to transcend certain of its limits, while Hottois begins from the question of how philosophy can accompany this transcendence while retaining its critical capacity.** The former gives greater weight to possibility, value, and choice; the latter emphasizes context, pluralism, and the conditions of judgment. This difference makes it possible to combine freedom of enhancement with bioethical governance without eliminating the tension between them.

The relation between transhumanism and the humanist project depends on the way technologies are built, distributed, and justified, and therefore remains open to multiple paths. When enhancement is bound up with freedom, justice, and pluralism, and the human being is not reduced to raw material for a single program, it can be understood as an extension of a humanist project that embraces development and resists suffering. But when enhancement becomes an instrument of domination or a mandatory standard of efficiency, "transcendence" threatens the very values it claimed to advance. The future of the human being therefore remains a philosophical and political question, not a technical outcome decided in advance.

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[1] Nick Bostrom, "A History of Transhumanist Thought," Journal of Evolution and Technology 14, no. 1 (2005): 1.
[2] Bostrom, "A History of Transhumanist Thought," 1.
[3] Nick Bostrom, "Human Genetic Enhancements: A Transhumanist Perspective," The Journal of Value Inquiry 37, no. 4 (2003): 493.
[4] Gilbert Hottois, "Humanism, Transhumanism, Posthumanism," Revista Colombiana de Bioética 8, no. 2 (2013): 165.
[5] Hottois, Gilbert. "Defining Bioethics: Returning to the Sources." Revista Colombiana de Bioética 6, no. 2 (2011): 101.
[6] Nick Bostrom, The Transhumanist FAQ, version 2.1 (World Transhumanist Association, 2003), 4.
[7] Bostrom, The Transhumanist FAQ, 4.
[8] Hottois, "Humanism, Transhumanism, Posthumanism," 140.
[9] Hottois, "Humanism, Transhumanism, Posthumanism," 154.
[10] Nick Bostrom, "In Defense of Posthuman Dignity," Bioethics 19, no. 3 (2005): 202.
[11] Bostrom, "Human Genetic Enhancements," 493.
[12] Hottois, "Humanism, Transhumanism, Posthumanism," 160.

[13] Bostrom, "A History of Transhumanist Thought," 2.
[14] Bostrom, "A History of Transhumanist Thought," 3.
[15] Bostrom, "Human Genetic Enhancements," 493.
[16] Bostrom, "Human Genetic Enhancements," 494.
[17] Hottois, "Humanism, Transhumanism, Posthumanism," 144.
[18] Jean-Noël Missa, "Gilbert Hottois and the 'Species Technica,'" Revista Colombiana de Bioética 16, no. 1 (2021): 2.
[19] Bostrom, The Transhumanist FAQ, 4.
[20] Bostrom, The Transhumanist FAQ, 4.
[21] Hottois, "Humanism, Transhumanism, Posthumanism," 165.
[22] Bostrom, "A History of Transhumanist Thought," 3.
[23] Bostrom, "A History of Transhumanist Thought," 13.
[24] Bostrom, "A History of Transhumanist Thought," 13.
[25] Hottois, "Humanism, Transhumanism, Posthumanism," 140.
[26] Hottois, "Humanism, Transhumanism, Posthumanism," 140.
[27] Bostrom, "Human Genetic Enhancements," 494.
[28] Bostrom, "Human Genetic Enhancements," 494.
[29] Bostrom, "Human Genetic Enhancements," 493.
[30] Hottois, "Humanism, Transhumanism, Posthumanism," 160.
[31] Hottois, "Humanism, Transhumanism, Posthumanism," 160.
[32] Bostrom, "Human Genetic Enhancements," 496.
[33] Nick Bostrom, "Why I Want to Be a Posthuman When I Grow Up," in Medical Enhancement and Posthumanity, ed. Bert Gordijn and Ruth Chadwick (Dordrecht: Springer, 2008), 107.
[34] Bostrom, "Human Genetic Enhancements," 497.
[35] Bostrom, "Why I Want to Be a Posthuman," 108.
[36] Hottois, "Définir la bioéthique," 101.
[37] Missa, "Gilbert Hottois and the 'Species Technica,'" 2.
[38] Missa, "Gilbert Hottois and the 'Species Technica,'" 2.
[39] Missa, "Gilbert Hottois and the 'Species Technica,'" 2.
[40] Hottois, "Humanism, Transhumanism, Posthumanism," 153.
[41] Hottois, "Humanism, Transhumanism, Posthumanism," 144.
[42] Hottois, "Humanism, Transhumanism, Posthumanism," 144.
[43] Hottois, "Humanism, Transhumanism, Posthumanism," 153.
[44] Hottois, "Humanism, Transhumanism, Posthumanism," 153.
[45] Hottois, "Humanism, Transhumanism, Posthumanism," 160.
[46] Hottois, "Humanism, Transhumanism, Posthumanism," 160.
[47] Gilbert Hottois, "Éthiques, sciences et sociétés : pour de nouvelles figures de dialogue," Économie rurale, no. 271 (2002): 49.
[48] Hottois, "Humanism, Transhumanism, Posthumanism," 160.
[49] Hottois, "Humanism, Transhumanism, Posthumanism," 160.
[50] Hottois, "Humanism, Transhumanism, Posthumanism," 166.
[51] Hottois, "Humanism, Transhumanism, Posthumanism," 166.
[52] Bostrom, The Transhumanist FAQ, 4.
[53] Bostrom, "Why I Want to Be a Posthuman," 107.
[54] Bostrom, "Why I Want to Be a Posthuman," 107.
[55] Bostrom, "Why I Want to Be a Posthuman," 108.
[56] Bostrom, "Why I Want to Be a Posthuman," 108.
[57] Bostrom, The Transhumanist FAQ, 4.
[58] Bostrom, "In Defense of Posthuman Dignity," 205.
[59] Bostrom, "In Defense of Posthuman Dignity," 205.
[60] Bostrom, "In Defense of Posthuman Dignity," 205.
[61] Bostrom, "In Defense of Posthuman Dignity," 207.
[62] Bostrom, "In Defense of Posthuman Dignity," 206.
[63] Bostrom, "In Defense of Posthuman Dignity," 207.
[64] Bostrom, "In Defense of Posthuman Dignity," 207.
[65] Bostrom, "In Defense of Posthuman Dignity," 208.
[66] Bostrom, "In Defense of Posthuman Dignity," 208.
[67] Hottois, "Humanism, Transhumanism, Posthumanism," 153.
[68] Hottois, "Humanism, Transhumanism, Posthumanism," 153.

[69] Bostrom, The Transhumanist FAQ, 20.
[70] Bostrom, The Transhumanist FAQ, 20.
[71] Bostrom, "Human Genetic Enhancements," 499.
[72] Bostrom, "Human Genetic Enhancements," 499.
[73] Bostrom, "Human Genetic Enhancements," 500.
[74] Hottois, "Humanism, Transhumanism, Posthumanism," 153.
[75] Hottois, "Humanism, Transhumanism, Posthumanism," 153.
[76] Hottois, "Humanism, Transhumanism, Posthumanism," 153.
[77] Hottois, "Humanism, Transhumanism, Posthumanism," 153.
[78] Bostrom, "A History of Transhumanist Thought," 13.
[79] Hottois, "Humanism, Transhumanism, Posthumanism," 166.
[80] Bostrom, "Why I Want to Be a Posthuman," 109.
[81] Bostrom, "Why I Want to Be a Posthuman," 109.
[82] Bostrom, "In Defense of Posthuman Dignity," 205.
[83] Hottois, "Humanism, Transhumanism, Posthumanism," 166.
[84] Bostrom, The Transhumanist FAQ, 4.
[85] Hottois, "Humanism, Transhumanism, Posthumanism," 166.
[86] Bostrom, "Human Genetic Enhancements," 493.
[87] Bostrom, "Human Genetic Enhancements," 493.
[88] Bostrom, "Human Genetic Enhancements," 497.
[89] Hottois, "Humanism, Transhumanism, Posthumanism," 153.
[90] Bostrom, "Human Genetic Enhancements," 500.
[91] Hottois, "Humanism, Transhumanism, Posthumanism," 166.
[92] Hottois, "Humanism, Transhumanism, Posthumanism," 166.