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# Can Ethics Govern Technology? Bioethics in the Age of Techno-Science

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**Abstract:** *One of the premises behind bioethics is the conviction that ethics can govern technology. But is this conviction still tenable? In trying to answer this question, we cannot evade the line of thinking inspired by Heidegger that continues to be wholeheartedly sceptical about the chances of ethics steering technology. Battling against this scepticism, the aim of this chapter is to demonstrate that a different relationship between ethics and technology is feasible. This is done by referring on the one hand to Habermas, to debunk the theory that the powerlessness of ethics is a natural necessity, and on the other to Ladrière, to identify the conditions for technology to become an element of moral creativity.*

**Keywords:** *human habitability; technological environment; deliberative democracy; ethics and techno-science; ethic of responsibility; communicative rationality; reasoning and calculating.*

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# Can Ethics Govern Technology? Bioethics in the Age of Techno-Science

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## Introduction

Bioethics has now become so well established that it is one of the most debated topics in our societies [1]. This is because - more as an expression of cultural sensitivity than as a specific discipline - it has succeeded in intercepting the ethical questions posed by the way in which our new powers of intervention on life are managed. These new powers are provided by science and technology, or rather by “techno-science” [2], a term that better describes the now virtually inextricable links that have been developing between science and technology. The ethical dimension of the questions raised by our handling of these new powers are self-evident, despite the techno-scientists’ misplaced conviction that the issues can be solved in exclusively-technical terms. These powers carry not only benefits, but also associated risks, making it essential that we discuss together which and how many risks we are willing to take. These powers offer gains, but in many cases they also entail enormous costs, so we have to decide on the priorities that we intend to establish. Faced with the ambivalence of techno-science, with the awareness of its potential and also of the risks it carries when its powers touch on the innermost structures of life itself, what is directly called into play is our moral responsibility.

An excellent example of the type of new power we are talking about can be seen in the field of genetic engineering. It has the power to affect the structures that give all living organisms their specificity and individuality, and that combine together to produce the ecological balance of the whole biological system. After developing its ability to see a genetic structure like an organized dataset, genetic engineering has now enormously extended its capacity for knowing, changing, and using living organisms. It can be used to modify organisms to strengthen their resistance to certain parasites or herbicides, or to particularly adverse environmental conditions. We can generate transgenic animals as experimental models that biologically resemble humans, and possibly even use their organs for human transplants. We can produce synthetic bacterial genomes by assembling DNA sequences obtained in the laboratory and then inserting them in bacteria deprived of their own

original genome in order to “train” them to have certain useful functions (in synthetic biology). We can alter the genetic sequence of the somatic and germinal cells of living organisms by means of gene editing technologies that are becoming ever more precise and focused, and also increasingly easy to use.

Even sketched in these few lines, this reference to the potential of genetic engineering suffices to show that the more technological interventions go into depth, and the more rapidly they advance, the more the ethical issues they raise become inescapable. For instance, is our current understanding of genetic and ecological dynamics sufficient for us to be able to predict the risks potentially deriving from our creating genetic combinations previously unknown to nature? The most convincing reason for taking this question extremely seriously has to do with the very concept of living organism. Unlike mechanisms, in which everything can be brought down to their single parts, and we can isolate single parts and contain our intervention on them, organisms cannot be reduced to the sum of their single parts, they are complex entities. Hence the difficulty of governing systemic effects, or in other words of controlling what happens to the whole when we take action on a part. We must not forget that genetic engineering enables us to redesign living organisms that are the product of three billion years of evolution. This fact in itself carries further uncertainties relating to how genetic engineering can change the speed of evolutionary processes. Caution is a first, mandatory condition for responsibly managing the new powers afforded by techno-science.

The increasingly insistent appeal for responsibility has become a general paradigm of ethics in the age of techno-science, but there is no doubting the fact that H. Jonas [3] takes the merit for placing the concept of *responsibility* at the very heart of our ethical reflections, even to the point of making it a guiding principle. The premise on which Jonas constructs his proposed “ethics for technological civilization” stems from the conviction that humans are capable of steering the new powers offered by technology towards certain goals. Basically, technology is seen as a tool – it may be as novel, complex and pervasive as you like, but it is still only a tool. Jonas explains this “humanist premise” in the following terms: “For the sake of human autonomy, the dignity of owning ourselves and not letting us be owned by our machine, we must check the technological stampede” [4] (pp. 891–898). Though the ontological foundations behind his approach may be open to criticism, its merits are undeniable. Jonas provides one the most lucid diagnoses that contemporary thinking has succeeded in expressing of the qualitative changes in human agency produced by technology. Above all, he is particularly convincing in claiming that the responsible management of technology is a fundamental moral imperative, an issue on which human dignity itself

depends.

But in the light of the advances made in techno-scientific knowledge, is this “humanist premise” still tenable? In other words, is ethics capable of governing technology?

We cannot give this question any serious thought without discussing the lines of reasoning adopted by influential contemporary philosophers to justify their skepticism concerning the ability of ethics to steer technology. The theory that I intend to support is that a more critical approach to the relationship between technology and ethics, developing from some of the most representative traditions of our European culture, can discredit such skepticism and continue to sustain the credibility of the humanist premise.

### **Is ethics powerless in the age of technology?**

Umberto Galimberti is the Italian philosopher who has contributed the most to the popularity of a line of thinking that - from Heidegger to Severino - claims to offer good reason for being sceptical, that he justifies with a particular interpretation of modernity [5]. He bases this interpretation - notoriously inspired by Heidegger - on the gradual identification of *reasoning* with *calculating*, typical of the evolution of rationality in the modern age. As *reasoning* has increasingly come to coincide with *calculating*, it is hardly surprising that technology has come to represent the strictest rationality. It follows that, as technology represents the strictest rationality, it is destined to absorb human rationality in all its facets, brushing away all its residual anthropological content (values, desires, passions). This becomes just as necessary as any natural process. Galimberti's peremptory conclusion is that, “Ethics as an indication of what ‘must be’ cannot avoid surrendering to technology, which *knows* how things must be in order to optimize well-being and growth according to criteria of the strictest rationality, based on an evolutionary pattern that increasingly resembles a *natural* process rather than a *historical* process” [6, p. 221].

Clearly, the sceptics' lack of faith in the capacity of ethics to govern technology knows no bounds. As Galimberti sees it, neither the *ethic of responsibility*, nor the *ethic of conviction* (the two extremes between which ethically-oriented human action oscillates according to M. Weber) stand a chance. The reason is simple: where technological action is self-perpetrating, it engenders consequences that are *independent* of any intention, and also *unpredictable* as regards their final outcomes. Faced with technology's ever-increasing independence and the structural unpredictability of its consequences, all we can do is realize the utter powerlessness of ethics. Referring particularly to bioethics, Galimberti says that:

The ethic of responsibility demands that a subject be responsible not only for his intentions, but also for the effects of his actions.

On one condition, however: that these effects be predictable. But

it is characteristic of technology to have unpredictable effects - as in the case of cloning. This is where ethics has to chase after technology. So then what? It establishes that humans must not be cloned. But how can ethics ask technology not to do what it is capable of doing? Can it really do so? I think not [6] (p. 119).

But is it really true that technology wields such a totalizing power? If it were, and if we were therefore obliged to accept that ethics is completely powerless against technology, then all bioethics would have to do is serve as a sort of acclimatizing chamber, or incubator, to facilitate a process of gradual adaptation such that even outcomes that initially seem morally particularly troubling (like the case of cloning to which Galimberti himself refers) become acceptable in the end – where the term “in the end” simply means when ethics surrenders to the power of technology.

### **A more critical conceptualization of the relationship between ethics and technology**

Going against this scepticism, the voices of some of the most representative traditions of contemporary philosophy are saying that we can see the relationship between ethics and technology in a different light. On the one hand, we can refute the theory according to which the process leading to the powerlessness of ethics is a natural necessity. On the other, we can create the right conditions for technology to be an element of moral creativity. These are two stances taken respectively by J. Habermas and J. Ladrière.

#### *The conditions for bridging the gap between opportunity and capacity to choose: Habermas's proposal*

Although modern societies do actually seem incapable of managing the knowledge and power that they increasingly have at their disposal, this powerlessness is by no means a natural necessity. It is the product of certain historical dynamics. This is what Habermas suggests, and this provides the starting point for a more critical conceptualization of the relationship between ethics and technology, that he approaches on the grounds of a different interpretation of modernity.

For Habermas, the dual project of modernity involves exerting a *scientifically* rational power and an *institutionally* rational power in order to grant a public debate regarding the way people are willing and able to live together. If this is the case, then we have to admit that this project has remained “incomplete”. The reasons lie basically in the fact that, over the course of modern times, the rationality governing the powers gained by technology (“instrumental

rationality”) has become detached from the public debate on how to deploy these powers (“communicative rationality”). This has given rise to an ever-growing phenomenon that in some ways sums up our post-modern condition, and that finds its most evident and dramatic expression in the bioethical issues we face, i.e. the gap between our expanding *opportunity* to make a choice and our collectively weakening *capacity* to do so [7]?

So how can we bridge this gap? How can we strengthen our collective capacity to make a choice?

The evolution of modern Western society shows that certain dynamics gradually gaining ground are constantly eroding the forms and content of our traditions. In the past, it was the power of tradition that decided much of people’s behaviour. But in modern society it is the individual who serves as the core reference value, and the areas in which he or she has freedom of choice have expanded considerably. The acknowledgement of an individual’s personal autonomy as a value is certainly a step forward in the process of our emancipation, but it is not without its troublesome facets. The problems are particularly evident in the bioethical field, where managing our new powers of intervention on life can hardly be left to individual choice alone - if for no other reason than the fact that any usage of the new powers available in this field inevitably has consequences that extend beyond the individuals directly involved. They can affect everyone else’s life too, and in some cases even risk manipulating the very structure of human socialization. So, where do we find the solution?

Habermas would answer that we need to develop our “communicative rationality,” as the basis for a debate focusing exclusively on the power of the arguments. In societies like ours, which are the offspring of modernity, our ever-greater emancipation from the social norms dictated by tradition has undeniably made us freer. We come under fewer constraints. At the same time, we are now rather short of shared references. Argumentation thus seems to be the most valid way for us to decide together what rules should govern our living as a community. Between an objectively-founded decision and an arbitrary decision, there is space for making a choice in the light of an exchange of ideas in which reasons can be weighed, judged, discussed, criticized, improved, and accepted or refused.

During this debate, it is fundamentally important that everyone be willing to let the *strongest argument* prevail. That is why this practice can be qualified as “ethical.” If we tend to let the argument of the *strongest speaker* prevail instead, then the line more or less explicitly adopted takes on a “strategic” nature. In practice, the former (ethical) solution demands that we create the right conditions for all potential participants in the debate to genuinely have the same opportunity to make their voice heard, and to exchange their views with those of others, constrained by nothing except the sole rational force of the

best argument.

The theorists of deliberative democracy have dedicated particular attention to these right conditions, with which Habermas's ethic of argumentation is closely connected. Analyzing the social functions served by creating adequate spaces for debate in public health institutions, like ethical committees, Amy Gutmann (a well-known exponent of deliberative democracy) envisages that:

A well-constituted bioethics forum provides an opportunity for advancing both individual and collective understanding. Through the give-and-take of argument, participants can learn from each other, come to recognize their individual and collective misapprehensions, and develop new views and policies that can more successfully withstand critical scrutiny [8] (pp. 40–41).

These indications are implemented in the deliberative practices of health care ethics committees, but they are equally applicable to the sphere of bioethics in general. There is an increasingly deep conviction that the proper management of bioethical issues demands a shift from individual decision-making processes to a more collective and participative approach.

Given this baseline condition, i.e. the commitment to getting more people involved, it might seem that making room for as many voices as possible to be heard will inevitably lead to an intensification of the moral conflicts. Experience has demonstrated that it is worth running this risk, however, given the benefits deriving from the fact that decisions that go through such a process enjoy a shared moral legitimization - the benefits of decisions made in the "first person plural" [8, p. 41].

*The conditions for making the technological environment humanly habitable:  
Ladrière's proposal*

Like Habermas, Ladrière recognizes the problems that ethics faces in our technological times. Habermas admits that ethics has come to seem powerless in the face of technology in our societies, but he also very convincingly demonstrates that this situation is not irrevocable. It is the outcome of clearly identifiable historical dynamics, and the precise aim of his critical analysis of these dynamics is to identify them clearly, and suggest how to combat them.

From his point of view (that of the philosophy of science), Ladrière relates the difficulty that ethics faces in the age of techno-science to a particular way of intending the influence of technology on ethics [9]. He sees technology as having a dual impact on ethics, that is *destabilizing* on the one hand, but *stimulating* on the other. Technology has a destabilizing effect because using the new powers of intervention on life that it offers uproots humans from the previously *stable* world they were used to dealing with, obliging them to cope

with an unfinished reality that they themselves transform every day, and by which they too are transformed. The impact of technology is also stimulating inasmuch as the novelty and the potential it offers can serve as a stimulus for our moral imagination.

The category to which Ladrière refers in discussing our human being in the age of technology - and that he adopts as an ideal for regulating the relationship between ethics and technology - is "habitability". His use of this term makes it immediately evident that the core issue is the problem of how to manage not the potential of a given single technology, but our technological universe as a whole. So the fundamental question that Ladrière poses is how the artificial environment generated by technology can be humanly habitable.

His answer is inspired by an evocative phenomenology of habitability. For the technological environment to become humanly habitable, people need to have a sort of "familiarity" with it. It has to be a place where they can feel at home, where their "life can be conducted freely." According to Ladrière, the conditions needed for this to happen can be defined by the constitutive dimensions of the human being. For instance, a technological environment that generates a physically unsustainable sensory input would not be humanly habitable, nor would a technological environment that reduces human interactions to merely functional relationships. A technological environment that reduces the historical dimension of our being to the rhythm of a mechanism would likewise be humanly uninhabitable. Clearly, these are not conditions imposed by any abstract metaphysics, but derivable from the original experience that places human beings in contact with the life-world.

Based on this premise, the first condition for a technological environment to be humanly habitable has to do with our bodily dimension. It is with our bodies that we exist in direct contact with the world, inasmuch as concerns our *affectivity* (our capacity to feel, absorb, resonate), and our *effectivity* (our capacity to take action in the world that goes beyond the simple game of natural causality). The habitability of the technological environment should therefore be judged first of all from the point of view of its impact on our corporeality.

We must not forget, however, that our body mediates between our being and our world (which is why it is the first factor to consider in determining the habitability of the latter), but only if it is part of a shared space for interaction. A space where people constantly meet, create meanings for themselves, and exchange them with others - to such a degree that the human being can only fulfil itself through *coexistence*. As a consequence, another equally important parameter for assessing the habitability of our technological environment consists in its impact on the community of human beings - on their coexistence - rather than on any given particular situation.

But then our being, considered in its corporeal dimension and in the sense of our coexisting with others, is experienced in a structural *tension* marked by a

constant sense of incompleteness – an ontological condition takes the form of a *lived temporality*. This is a totally different matter from the physical temporality in which the scientific representation of the world places all of its phenomena. Lived temporality is the condition that turns our existence into the story of its manifestation, making it both heir to itself and the promise of its future. It is another essential parameter against which to assess the human habitability of the technological environment.

In short, this environment - in which increasingly large proportions of our lives are enacted - can be considered humanly habitable to the degree in which it guarantees the conditions that enable us to keep a grasp on our humanity: our bodily integrity; our participation in each other's lives; and our opportunity to have a story that has a sense.

All this is certainly hugely important, but does not completely cover the heuristic breadth of the category of habitability, which has to do not only with "compatibility", but also with "exchange and reciprocity." Ladrière attributes a special importance to this aspect, given the significance that he assigns not only to the destabilizing impact of technology on ethics, but also to its value as a provocation and a stimulus.

As a consequence, one condition that must certainly be met for the technological environment to be in harmony with our human being is that it provides a field in which our constitutive dimensions can develop. But another equally important condition is that our being can be enriched by the new possibilities offered by technology. If our technological environment succeeds in integrating our being, then a sort of resonance is produced that enables our being to chart its course in this environment, and enables the technological environment to add novel meanings to our being, opening it up to hitherto unexplored pathways.

Of course, when it comes to dealing with practical situations, the approach dictated by this fundamental habitability criterion can only serve as a general guideline. But, as Ladrière reminds us, in the uncertain and sometimes ambiguous and ambivalent circumstances in which human actions are undertaken in the age of technology, valid support can come more from an ethical awareness of the complexities of the situation than from norms that strive to cover every particular issue.

### **Conclusion: for a bioethical discourse capable of integrating the normative and the hermeneutic dimensions**

This albeit brief presentation of the proposals advanced by Ladrière and Habermas should suffice to illustrate the conditions needed for us to effectively overcome any scepticism concerning the ability of ethics to steer technology.

The strength of Habermas's proposal lies in that it reveals the ideological element inevitably contained in the assumption that ethics is *naturally* powerless in the face of technology. It is ideological in the sense that this assumption makes us tend to overlook the real historical dynamics behind the apparent powerlessness of ethics, and to neutralize any well-argued, transparent and participative public debate on the subject.

The strength of Ladrière's proposal consists in its original interpretation of the relationship between ethics and technology. It justifies not only the capacity of ethics to steer technology according to the need for the technological environment to be humanly habitable, but also - and equally significantly - the role of novel technologies in stimulating our moral imagination.

In addition to demonstrating the general feasibility of ethics governing technology, Habermas and Ladrière also suggest how to proceed in order to deal adequately with the problematic sphere of bioethics as a whole.

Here the problem has to do with two fundamental aspects. The first concerns the *normative* domain, i.e. which principles and rules should govern how we solve the novel conflicts raised by the need to manage our new powers of intervention on life responsibly. The second concerns the *hermeneutic* domain, and how we interpret the human sense of our being in the face of the provocations raised by novel technologies.

As mentioned earlier, the approaches taken by Habermas and Ladrière point in two directions: the former towards creating the right conditions, in an increasingly pluralist cultural setting, for the development of norms that are as universally applicable as possible; the latter towards inscribing the technological environment within the effective motion of our being, and this - given the original experience that precedes every representation - has to do with corporeality, with otherness, and with temporality.

Leaving aside the specific means proposed by the two philosophers, what they are both saying is that, if we want to address the whole array of bioethical issues, then both the above-mentioned dimensions - the normative and the hermeneutic - have to be involved in substantiating the bioethical discourse.

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