

# Ethics of Biotechnology



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## Introduction

Asclepius was brought up by Chiron, the wisest of centaurs, who taught him the secrets of medicine. Asclepius prodigiously developed his skills in Medicine so far as to bring the dead back to life. This attack on the order of things irritated Zeus who found it audacious. This Greek myth is a good point of departure for any ethical reflection. The story of Asclepius recalls to us that, for the Greeks, the greatest of the vices is excess. Wanting to go beyond the measure, beyond what is reasonable, beyond what is Human, this is a crime that the gods cannot tolerate. Excessiveness is the most illegitimate thing.

To avoid the vice of excess, humans are invited to develop in them the virtue of prudence. According to Aristotle, prudence is the proper intellectual virtue to the one who has the responsibility of governing in the interest of the common good. He is neither a scholar nor a wise man; he is someone who makes decisions, someone who is involved. In Greek the word '*politicos*' means the administrator of the household or the city. Prudence is the virtue that the *politicos* must acquire, for virtue is something that is acquired, developed by experience understood in a large sense to include the experience of humanity. The modern equivalent of the virtue of prudence is the Principle of responsibility. This is why we will continue our reflection by using the ideas of Hans Jonas, author of the famous book *The Imperative of Responsibility*.

## Jonas' View of Responsibility

The *Imperative of Responsibility* is the best known work of Jonas [1]. It is based on the rehabilitation of the concept of "end": "Nature manifests at least a determined end to know life itself" Jonas [1]. Jonas therefore rejects the idea that life can be the result of a play of external forces more or less linked to chance. Life is the most advanced manifestation of being. From this comes the idea that nature must already have this end in itself, against the traditional Cartesian separation between matter and spirit, separation methodologically necessary for the progress of science. The philosophy of nature of Jonas proposes a mode of intelligibility of the world different from the Cartesian mode.

The Cartesian mode is the mode of intelligibility proper to science where complex sets are understood as sums of simple elements. The scientific reductionism transforms

theoretical construction into a process fragmentation. The real conceptualized this way becomes something that can be technologically manipulated. This results in the extraordinary development of modern technology. It may even be said that the mode of intelligibility has produced a reversal of the order of things: reality is what can be technically manipulated; if it can be manipulated, it must have been simplified. Consequently, what is complex cannot be the sum of what is simplified. This mode of intelligibility is also valid for the world of the living. Modern technology is, in a way, the metaphysics of modern science.

It is this last point that Jonas rejects. Scientific reductionism should not become the understanding of the world, especially of the living. Life cannot be reduced to a set of simple elements and therefore potentially controllable by technology. Moreover, for Jonas, human person is not the same as other living beings. Human person is in some way "perishable" because he/she possesses the means of self-destruction. Hence Jonas makes an important major ethical assertion: "Act so that the effects of your action are not destructive of the future possibility of such life" Jonas [1]. Let us therefore avoid actions that jeopardize the future of human life.

To act responsibly is to have a certain fear always before the technological interventions on the living. This ethics goes beyond ethics for the neighbour; it is of the order of politics. Through this path, we find, in a way, the virtue of prudence which, for Aristotle, was virtue of *Politicos*, which has concern for the good of the city state and by extension, for humanity and its future.

## Controversies over Biotechnology: Rational Necessity or Irrational Fear?

Our contemporary societies are characteristic of controversies in relation to human inventiveness. Thus, the problem of the crisis of values in relation to biotechnologies in today's societies arises. There is no longer any doubt that biotechnology is nowadays applicable in all fields of action of contemporary human person. Biotechnology is part of the technologies of the future such as micro-computing and robotics which could ultimately transform the lives of individuals and the profile of their societies. But more than in

other fields, biotechnology has had an important peak in terms of controversy with the problems of animal cloning and the valuation of genetically modified organisms called GMO. Can we, through some deviations related to certain evils inherent in biotechnology via science and technology, talk about crises of values in contemporary societies? Nothing is less sure!

Human inventiveness, through some hazardous manipulations sometimes arouses fear and even controversy in the well-being of the people. The meteoric progress of biology and molecular genetics are both worrying and fascinating. This is mainly because of certain practices considered inconsistent with human values and ethical requirements, which raise doubts, suspicions and fear about these practices. Is it irrational not to endorse this fact? If human inventiveness through its action is thus discussed, dreaded, and even diverted from traditional rational paths, should we, willy-nilly, fear future-oriented products which, it seems, could definitively solve certain human health problems? Indeed, the field of human health is the one that worries even sceptics of biotechnology. However, it is also one on which humanity could base all its hopes in terms of cures for rare diseases of genetic origins.

Amidst these controversies, we can say that certain fears inherent in new biotechnology can be justified rationally because of the uncertainties associated with certain products that have already shown their limitations in terms of efficiency. It would not therefore be an obsessive fear of the novelty and the unknown that belongs to the irrational, but rather certain practices as well as certain products born of these innovations, which would generate some reticence among the people. Indeed, novelty and its share of innovations must not be disarray but hope for humanity, provided that it definitively imposes the logical necessity of laws that take taking into account ethics as a cardinal value associated with any innovation. Ethical norms must be present and introduced into the basic research process as prerequisites for any scientific approach worthy of interest. However, if ethics is the outcome of the correctness of the action, excessive prudence or the precautionary principle must not become incompetent or irrational frenzy towards the unknown, at the risk of damaging progress itself. Hence, human inventiveness must be perpetuated in complete freedom. It is, in our view, the duty of human responsibility towards humanity, but also in the context of the safeguarding nature. Only the requirement of an ethical framework must regulate the insatiable human inventiveness with the aim of converging freedom of creation and duty of responsibility.

### **Necessity of Human Invention and Ethical Concern: Freedom and Duty**

Reason demands that the human person be valued for his/her abilities. Inventiveness is one of those human skills that contribute to a better quality of life. This is how it proliferates in several fields, including biology, which is one of the

pioneering disciplines in the implantation and enhancement of biotechnology. For our contemporary societies, which are becoming increasingly demanding in terms of productivity, inventiveness and profitability, the ethical concern must be, as we see it, a principle of unconditional necessity. If everyone is allowed to do as he/she pleases, it is not excluded that our present societies may expose themselves to the most unlikely drifts, capable of undermining certain human achievements in terms of ethical progress.

Rationality in the sense of exercising reason consists, to some extent, in consolidating some of these human assets, such as rights, freedom of thinking, acting or creating. But it is nonetheless true that some aspects of freedom are channelled by the requirement of duty. If values are assimilated to duty, they may well be of a coercive nature, such as Kant defines duty, that is to say, a moral obligation to which one must absolutely tend unconditionally. This is tantamount to saying that, although free to undertake a decision that goes in the direction of creation and inventiveness, the human person is bound to break with certain orientations that devalue or evade an ethical implication capable of opening a field of reflection on the activity favourable to the greatest number. It's a human imperative, it's a duty. For, between the desire for freedom and the demand for duty, there is a qualitative necessity for action, that is to say, an imperative rectitude of human action. If being free is to undertake freely, to be free is also the concern to be part of a just and responsible action.

The human person has invented and continues to invent all sorts of technologies, some of which, obviously, are subject to controversy, as they sometimes generate products that do not always go in the direction of the primacy of values. But above all, these products are at the same time vectors of a number of tools and manufactured products which pose significant risks to human, animal and environmental consumption. Genetically Modified Organisms (GMO) are part of these products, which have not yet found a definite place in certain countries where associations and certain organized groups put pressure on the decision-making powers as regards their adoption within the society. Rightly or wrongly, the issue of GMOs is divided in the same way as other innovative initiatives such as human cloning, medically assisted procreation, etc. It is said that, in the name of the precautionary principle, this prudence seems justified, which may at the same time be a source of retardation in terms of medical or industrial progress. Laws must be effective and clearly applicable and they must serve as a framework for all emerging innovations as well as the related biotechnological practices. The mere precautionary principle does not necessarily provide satisfactory legal protection, since it is sometimes a source of rational as well as fanciful interpretations for both.

It is clear that, values do not have a uniform understanding within our societies. Indeed, even religious values, for example, which give foundations to a large number of Western

civilizations, are now subject to the principles of secularism. It is clear, then, that values, whatever they may be, are now multiform because they have become as much monetary, economic and social. Indeed, the maintenance of life is itself discussed today in the framework of bioethics, which questions the need to preserve the life of a human suffering from terminal cancer. It thus appears that the value of life itself now includes certain subjects which are subject to the discussion and appreciation of the human person or the human society. It is therefore fair to assume that ethical values will also have to be debated within the framework of inventiveness and that of biotechnological practices. It seems to us fair and fundamental to think that the rejection of ethical considerations relating to human inventiveness is likely to pose an important risk as regards the quality of products subject to the consumption of living beings. The evidence of an ethical consideration in decision making, necessary to objectively determine the qualitative sum of the moral values inherent in human reason, is important in all fields of application of biotechnology. This is why ethical concern must be posed as a prerequisite for all human action. This is all the more in the fields of biotechnology, which increasingly generate both benefits and evils in their production chains.

For example, problems related to the genetic modification of organisms of economic interest are unanimous among the people. This is still the case for genetically modified cereals in order to provide more effective resistance to insect pests. Obviously, these practices may still involve risks and dangers that are still unknown to science. This is why the ethical demand must be a priority, *a-priori* requirement in the very conception of the product. This is tantamount to saying that the issue of ethics must not be an instrument of judgments of results obtained *a-posteriori* but an active instrument in the process of elaboration, production and distribution of biotechnological products. In other words, ethical action must necessarily take place in all the production chains of products, that is, upstream in their design and downstream to their consumption.

Considering all aspects of human life, it is normal to question the creative freedom of the sciences and their array of technological innovations. While fear that arises can be described as irrational, it is fair to fear a latent perdition of current models of our contemporary societies in terms of research and development, especially if they evade ethical concern and respect for nature and environment in the design, production and distribution of their products. Taking into account the ethical aspect in the production chain of products, we can start a decisive era, which would perhaps have better control of our problems thanks to biotechnologies.

### Genetic Engineering of Human Genes

What about genetic manipulation of human genes? Is it prudent to allow human person to modify his/her own biogenetic architecture? The imperative of responsibility does not allow for

anything that is technologically feasible if the risk makes human life more vulnerable. It seems to me that genetic manipulations are of this order, for the extraordinary Complexity of the infinitely small which makes us extraordinarily vulnerable. To believe that when we have fully deciphered the billions of genes that constitute our biogenetic architecture, we are risk-free to manipulate them is based on prejudice already mentioned: a complex thing is the sum of these simple elements. The day we technologically manipulate these genes, we will be strengthened in our reductionist epistemology and prudence takes leave of us.

But should this wise fear lead us to totally prohibit any genetic modification? Perhaps not, at least theoretically! It could present situations where the goal is commendable. Should there be a certainty that genetic manipulation can heal a serious illness, may be it would be acceptable. Conversely, changes that would aim to improve performance and appearance seems to me not so laudable as it brings with them unnecessarily risk factors. Prudence should prompt us to abstain from them. These are manipulations aimed at increasing the muscle force, weight, height, hair growth, colour of the skin, etc. Even those which improve memory or learning skills seem to me disturbing [2]. What about the question of extending the duration of human life beyond its present limits? Let us imagine that the duration of human life is genetically determined and severe disabilities are eliminated. This could increase our longevity. What would be the consequences? Living more long with an accumulation of inabilities! In Effect, inabilities increase with older age and they are due to a myriad of causes, which none myriad genetic modifications could make disappear. So I do not see any benefit to manoeuvres. On the contrary, it appears to me totally unwelcome.

In any case, biology accounts only for 25% of the factors that affect longevity, 75% of these factors fall within the socio-economic dimension, that is to say, relative poverty, level of education, satisfaction with work, etc. The more the gap between the rich and the poor, the greater the loss of longevity for the poor! Those who have completed twelve years of schooling will live nearly seven years more than the less educated. Those who exhaust themselves in jobs that are ungrateful and lacking incentives live less Hadler [3]. This socio-economic complexity is in addition to the complexity of biology. This should encourage us to question the Cartesian prejudice of simplification. But this one has a hard life, for it is Necessary for the development of technologies and Resulting financial empires.

### Revisiting Philosophy of Human Person

Let us now turn to the Philosophy of human person and the meaning of life. Why would we want to live longer? Why would we reject the occurrence of our death beyond current limits? It seems to me that this leads even to a deeper question. Beyond its organic substrate, what is a human life? Unlike an animal life, human life is a process of self-fulfilment, a process that makes us

see the evolution of our profound identity. We are not ourselves by birth, we become what we are, or more precisely, we arrive at what we are. This is the goal of our lives.

Schematically, this goal, imperfectly realized, unfolds in three dimensions. The first dimension is that of the project. It contains the ideas of will, goal, direction and movement. It refers to the construction of its life, its deployment, its blossoming. The second dimension is that of sharing. It contains ideas of exchange, communication, contact, commonality, participation and being together. It evokes the relationship with others, with the community and with humanity at large. The third dimension is that of identity. It contains the ideas of "being oneself," to continue to be what one was now and in the future, to be recognizable as Self. It evokes the unity of the personality, its perpetuation and its expression.

The question of the prolongation of life then leads to this question: By living longer, would it be possible to arrive at oneself? Would living longer allow for a better deployment of the three dimensions: project, sharing and identity? I maintain that nothing really makes it possible. In fact, the old age being always linked to many limitations in our ability to deployment everything tends to infirmity. Some may argue that this idea of deployment is peculiar to the West. I believe in the contrary that it is very strongly universalized, although reality often limits the possibility.

### Conclusion

The advances in scientific progress today have a mitigated acceptance within human societies. The emergence of new disciplines within the basic sciences, including genetic engineering, molecular genetics and other disciplines of this type, still raises doubts and hopes as to their real capacities to bring about appropriate safe solutions both qualitatively

and quantitatively. It is therefore incumbent on the human persons, notably the intellectuals and the researchers, whether philosophers, ecologists or historians, to reflect in the most lucid manner possible on the models of exemplary societies which would suit not only humans, but also to the other living species with which human person cohabits within the ecosphere. The spirit of discernment inherent in human reason must avoid certain harmful drifts linked to biotechnological inventiveness or serious dysfunctions which could lead to the generation of irreversible threats to life.

Why then seek to prolong life beyond its current limits by means of genetic manipulations? The only desire of those who are not ready to let go does not seem to me a sufficient reason. Nor is the desire of those who are afraid of the unknown satisfactory. When we consider that the pursuit of this objective would mobilize resources to the benefit of technology and thus of financial institutions, this quest would neglect efforts to improve the socio-economic conditions of the majority. Reducing poverty, increasing literacy and improving working conditions are more important goals. In conclusion, let us take up the Greek myth: the goddess Eos obtained immortality for her lover Tithonos, but this one ages and loses his human aspect. Asclepius who would like to improve our life beyond natural limits should be wary of the anger of Zeus!

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