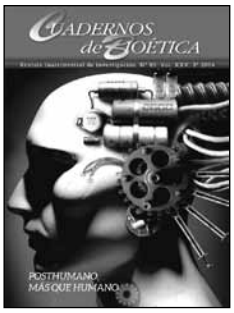

FROM DARWINIAN TO TECHNOLOGICAL EVOLUTION: FORGETTING THE HUMAN LOTTERY

DESDE LA EVOLUCIÓN DARWINIANA A LA TECNOLÓGICA: OLVIDAR LA LOTERÍA HUMANA

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ABSTRACT:

Keywords:
Posthuman, biology, anthropology, lewontin, marchesini.

The GRIN technologies (-geno, -robo, -info, -nano) promise to change the inner constitution of human body and its own existence. This transformation involves the structure of our lives and represent a *–brave?– new world* that we have to explore and to manage. In this sense, the traditional tools of humanism seems very inadequate to think the biotech century and there is a strong demand of a new thought for the evolution and the concrete history of life. The posthuman philosophy tries to take this new path of human existence in all of its novelty since GRIN technologies seem to promise new and unexpected paths of evolution to living beings and, above all, man. For this, *the post-human thought*, as we see, *is a new anthropological overview on the concrete evolution of human being*, an overview that involves an epistemological revolution of the categories that humanism uses to conceptualize the journey that divides the *Homo sapiens* from the man. But, is this right?

RESUMEN:

Palabras clave:
Post-humana, biología, antropología, lewontin, marchesini.

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Las tecnologías GRIN (-geno, -robo, -info, nano) prometen cambiar la constitución interna del cuerpo humano y su propia existencia. Esta transformación consiste en la estructura de nuestras vidas y representan un –¿valiente?– nuevo mundo que tenemos que explorar y administrar. En este sentido, lo instrumentos tradicionales del humanismo parecen bastante insuficientes para pensar el siglo de la biotecnología y existe una fuerte demanda de un nuevo pensamiento para la evolución y la historia concreta de la vida. La filosofía posthumana intenta tomar este nuevo camino de la existencia humana en toda su novedad ya que las tecnologías GRIN parecen prometer caminos nuevos y inesperados de la evolución de los seres vivos y, sobre todo, humanos. Por esto, el pensamiento post-humano, como vemos, es una nueva visión antropológica sobre la evolución concreta del ser humano, una visión general que implica una revolución epistemológica de las categorías que el humanismo utiliza para conceptualizar el viaje que divide a los Homo sapiens del hombre. ¿Pero, será correcto?

As we see, the rhythm and power of technological change seems to modify not only the existence but also the evolution of the human life. The GRIN technologies (-geno, -robo, -info, -nano) promise to change the inner constitution of human body and its own existence. This transformation involves the structure of our lives and rep-

resent a - *brave? - new world* that we have to explore and to manage. In this sense, the traditional tools of humanism seems very inadequate to think the biotech century and there is a strong demand of a new thought for the evolution and the concrete history of life.

The posthuman philosophy tries to take this new path of human existence in all of its novelty since GRIN technologies seem to promise new and unexpected paths of evolution to living beings and, above all, man. For this, *the post-human thought*, as we see, *is a new anthropological overview on the concrete evolution of human being*, an overview that involves an epistemological revolution of the categories that humanism uses to conceptualize the journey that divides the *Homo sapiens* from the man.

Prior to a new image of man, however, the posthumanism requires a new formulation of the theory of evolution. In fact, as we will see, the novelty of its approach is to "correct" Darwinian evolution with the introduction of the role of alterity in the course of organism's development. From this point of view, then, it is clear that for the man we should speak of a "technological evolution" because the main "contact" with the animal-man is interfaced are tools and machines. The human being finds his partner of evolution in technology, a partner who doesn't remain outside his biological constitution but penetrates the inmost of its processes.

Then, our analysis of the central evolutionary phenomenon of the posthumanism –that we decided to call *mutational hybridization*– tries to investigate its possibility and, consequently, to highlight the problems of its rightness. The possibility that "external" evolutionary partnerships affect the individual's genetic, perhaps, hides an approach that really does not exceed the Darwinian theory, thereby repeating pre-modern theories that, so far, were hard to justify.

2. Entering immediately on *medias res*, how can we describe the heart of posthuman philosophy? We see that the concept of *hybridization* is the focus of this anthropological overview on the development of the living being: hybridization is the biological dynamic at the center of the evolution which reject the "classical" humanism interpretation about the dynamics of life. In this sense, also the interpretation of man must be revised according to this approach that places the conjunction identity-alterity as a central element of the concrete existence of the organisms.

The posthuman philosophy, in fact, deny the humanism interpretation of a subject that constructs his identity versus alterity, that is an Identity that discovers his space and his role through its difference from Alterity. For this, the first act of posthuman "revolution" is an act of deconstruction of the image solidified in our cultural interpretations. The traditional image of man, in humanist paradigm, is typify by a dichotomical view that have separated human and world. *Man is a product of a separation from the alterity, seeking a purity that is discovered only eliminating the animal and the machine from his image*. The humanist paradigm have created an image of man divided from the world: his evolution is a process of separation from the Nature and his categories so that alterity is a risk for human identity[1].

For posthuman, instead, the human identity –as every biological identity– is constructed by the relationships with alterity. This means that the Animal and the Machine are active partner in *Homo sapiens* evolution, so much so that *it is only the hybridization the key to understand man, living being and their possibilities.*

The novelty of posthumansim is thinking that Alterity isn't only involved in the construction of our image but also in our biological and genetic evolution. Every hybridization, in fact, penetrates into the biological process causing a slipping in evolutionary pressure. The core of this new anthropological approach is a revision of Darwinian theory: *the evolution of living beings would not be an isolated path but a history of partnership enabled to withstand the environmental problems*. As we shall see, is the pervasiveness of the relationship between identity and alterity to produce a mutation of

1 In this case, the reference is to the classical anthropology of '900, especially at the thought of Gehlen according to which man is his own identity in opposition to the biological and evolutionary processes of other living beings; cfr. Gehlen A., *Der Mensch. Seine Natur und seine Stellung in der Welt*, Junker und Dünnhaupt, Berlin 1940.

the characteristics of the living, so hybridization must be recognized the true mechanism of development. This characteristic is then amplified by *Homo sapiens*, which leads to excellence the exchange of information and capacity with the animal and with the machine.

The Darwinian evolution is "integrated" by a sort of *technological evolution* because, now, man finds in technology a privileged partner of development. If, at the beginning of his journey, man evolved thanks to the contribution of animal partners, today the machine is able to create more efficient partnership to oppose to environmental problems. *The mutations that appeared to emerge randomly, have to be so recognized as performative shifts caused by the encounter with alterity*.

3. According to the posthuman, therefore, every identity is the result of a process of hetero-specific hybridization with partners, a process in which biological evolution is a concrete constitution of fusions. Also human identity is an essential tangle that involves human and non-human being and produces shifts of ability, capacity and function. The dynamic of its construction demands a new riding that is

> convergence towards alterity, including a first-rate place to the animal, whose loans have created a theriomorphic content which acts in the culture as a driving force for further hybridization with other non-human referents.[2]

Every hybridization, in fact, tears every human living away from his ontological fence and from his biological autarky, creating, thus, an *hybridational event*: what was being done "in solitude" now depends on the partnership of animal and technical alterity.

Because of this facts, *hybridization is a self-organized welding that implies the mutual transformation of living being which produces a real mutation in the genetic structure of the entities in relation*. Every hybridational event is the emergence of a binomial in which explode unforeseen and unexpected opportunities of evolution. How Berardi writes, mutation is an

> alteration of the form of the organism. Adaptation of the organism to the environment through a morphogenetic alteration. In the present age the mutation involves the body and the individual mind starting from a transformation of technology, production and social communication.
>
> The set of environmental changings [...] create conditions around the conscious body under which the conscious organism is not adapted.
>
> The process of adaptation of the conscious organism to the social, technological and informational environment is neither linear nor predictable; on the contrary, it is a process of microadaptations which provisionally crystallize in contradictory and incomplete forms. The process of adaptation is neither automatic nor immediate, and therefore cannot be explained by deterministic terms.[3]

Every relationship generates a mutation caused by the hybridization of different identity; but how can this ontological and biological "relation" produce a genetic mutation?

For posthumanism, *the survival of the living beings is linked to their capacity to get a better adaptation to their environment*: every living being has to face a selective pressure and every partnership helps animals in their survival. Each hybridization, in fact, produces a transformation that improves the fitness which measures the ability to survive and reproduce of the organisms that is expressed in the «evaluation of its adaptability»[4]: this is because the evolutionary process applies pressure on living beings evaluating their fitness through the adequacy of performance.

2 Marchesini R., *Il nuovo ruolo delle alterità non umane*, in Haraway D. J., *Compagni di specie. Affinità e diversità tra essere umani e cani*, trad. it. R. Marchesini, Sansoni, Milano 2003, p. 134.

3 Berardi F. "Bifo", *Mutazione e cyberpunk. Immaginario e tecnologia negli scenari di fine millennio*, Costa & Nolan, Genova 1994, pp. 5-6.

4 Tagliagambe S., *Epistemologia del cyberspazio*, Demos, Cagliari 1997, pp. 36-37.

Hybridization is precisely what allows to maximize and invent performance in order to better adapt to the environment: in this way, the living beings bring an essential setback to the challenges of their environment. *The dynamic of hybridization and the process of mutation, so, are to be merged*: they, in fact, contribute simultaneously to describe a living being constantly under construction, looking for the conquest of a better "position" within his habitat. At a glance, *mutation is the inevitable consequence of hybridization enabled to withstand the pressure of the environment*. In this sense, we call *mutational hybridization* this phenomenon which is the organism's response to the challenges that the outside poses to its survival.

The challenges of their environment, in fact, push organisms to interbreed and create partnerships to address the threats of the outside. Through hybridization, therefore, the selective pressure to which is exposed the organism's performance slides on the performance enabled by the combination of organism and alterity. Each slip of pressure, according to Marchesini, defines «the factors that compared to a particular performance change the fitness of a subject»[5]. The object of selection, then, is no longer the individual living but the binomial triggered by the partnership. Just because it is linked to the concreteness of historical evolution, each *hybridational event* deeply transforms the morpho-functional structure of identity, an alteration that is expressed in the mutation of its genetic characteristics.

The central theme of posthuman evolution, for this reason,

> it is related to the feedback that each technology has on the biological substrate. In other words, the central idea of this assay is that every human technology, and more generally any cultural acquisition, is in a sense a biotechnology because: a) as we have seen, it modifies the perception of performative optimality and thus the shortage of organic substrate; b) it modifies the ontogenetic environment of the subject and, then, all the functional and experiential factors that enter into the epigenetic development process; c) although more modestly, it makes a shift of the selective pressure by changing the genetic pool of our species at the population level.[6]

If in the "orthodox" Darwinism, mutation should "simply" designate a random and chaotic accumulation of "skills" that are fixed gradually in the genotype of the species due to the selection of the environment, posthumanism adds as a cause of mutational mechanism also the various *mutational hybridizations* that living beings established and pursue with animal or instrumental alterity. For the posthuman paradigm, *mutations are caused by hybridizations accomplished by the organism in order to obtain a better adaptability within its own ecological niche*. The mutational event is subtracted from the rules of the case to be actively influenced by shifts in the selective pressure: these conjugations are to enable new biological emergencies and new evolutionary paths that before were only potential.

The shift obtained in this way, in fact, is a new evolutionary path because subjects thus selected may «bring in the populational pool an increase of genetic complexity and make the population as a whole more fertile in their evolutionary potential»[7]. All this happens because the complexity is increased by the hybrid performance made possible by alterity. Consequently, as stated by Fuschetto, «life for every living thing, is never just a given but is always already experimenting new conditions of existence»[8].

A key step that allows us to understand how the cultural hybridization is based on the biological one - which authorize posthuman to eliminate any separation between what we call nature and what we call culture - is the fact that *alterity changes not only the identity's ontogenetic functions but also comes so much in depth that is inscribed in the phylogeny of the species*. The

5 Marchesini R., *Post-human. Verso nuovi modelli di esistenza*, Bollati Boringheri, Torino 2002, p. 21. p. 30.

6 *Ivi*.

7 *Ivi*, pp. 31-32.

8 Fuschetto C., *Darwin teorico del postumano. Natura, artificio, biopolitica*. Mimesis, Milano 2010, pp. 56-57, p. 21.

mechanics of *mutational hybridization* is not simply an ontogenetic transformation, linked to the evolutionary path of the individual in the course of his life, but a phylogenetic event in the sense that transforms, with its integration, the path of the species.

Marchesini, in this regard, states that

> while knowing very little about the mechanisms that regulate the different selective pressures operating on the genetic pool of the human population, it can be stated with certainty that it is sufficient a small invention to increase in a dizzy way man's survival, changing the pool of genotypes which leave descendants in the book of life.[9]

If we extend this argument to human identity, the animal and technological alterity are imprinted in the functional structure of the human being because they actually transform his genetic structure defining not only the image but also his entire biological configuration. Even the *Homo sapiens*, in fact, is actively molded by the action of the selective pressure which, however, is changed by the shifts in performance achieved through partnerships with alterity causing so, mutations in the gene pool. Without the partnership established with alterity, for man –as well as for each animal– it would be impossible to invent performances suited to evolutionary challenges.

Technological and animal alterity produces, however, a feedback on the fitness of the human, that is, significantly increases the ability of a man to survive thanks to new performance of which the human is capable of interbreeding with alterity. The mechanism shown by the posthuman is not, however, a prerogative of man, but characterizing, in general, the becoming of every non-human being; man, rather, leads to excellence the hybridative capabilities of the living being. In this case, then,

> every shift of evolutionary pressure, achieved through technological mediation, enrolls de facto that technology in the genetic heritage of the species. Technology, thus, becomes a kind of performative externalization which extends the operational domain of man on the external reality without impoverishing the species but enriching through their needs.[10]

Briefly, accept the contribution of non-human alterity within its own identity is what has driven the incessant *Homo sapiens* to adapt to his environment, until he reached the threshold that allowed him to transcend it. Man brings to the maximum level the ability to merge ontogenetically and phylogenetically with alterity so that he is no longer confined within his ecological niche. Therefore, every technological innovation produces a feedback on the genotypic structure of the organism. The redundant and recursive structure of the genetic information increases the virtuality of species, incorporating the modifications thus obtained[11]. Natural selection is so involved in a non-linear process of actualization:

> starting from the constraints to which each entity is subject, the process of actualization is a creative and inclusive act of the alterities encountered. On one hand, the entity has its own intrinsic virtuality (encountered an event, he has the ability to re-interpreted himself) and, secondly, the virtual constitutes the entity (as an essential part of its determination).[12]

9 Marchesini, *Post-human*, p. 34.

10 *Ivi*, p. 32.

11 In fact, another key point of posthuman is the idea that DNA behaves as a mnemonic dice, that bring out the more likely the mutation obtained by hybridization. Each hybridization, therefore, produces a feedback on morpho-functional and genetic structures of living beings so that the next generation implements this change and makes it available to the descendants and, thereafter, is the same genetic code to produce a feedfoward on the ontogeny of the organism as they will tend to reproduce more easily the mutated gene. The genetic "virtuality" of the species - once incorporated a specific mutation - allows the strong variability of the epigenetic development of the organism, that is to say the various transformations of the "potentiality" in specific configurations actualized during ontogeny. This should be achieved by the ability of the DNA to "back on itself", a kind of redundancy in the path of the phylogenetic species which is able to integrate the modifications obtained by hybridization; cfr. Marchesini, *Post-human*, p. 95.

12 Cfr. Lévy P., *Qu'est-ce que le virtuel?*, La Découverte, Paris 1995, pp. 1-7.

If this dynamic was almost imperceptible in the just passed evolutionary time, today the relentless and fast development of technology forces us to have to deal with mutations and shifts that occur during a single generation. As stated by Longo

> compared to the slowness of biological evolution, biocultural evolution is marked by increasingly rapid and labored changes, as if frames were missed balancing negative feedback to curb its race. [...] Technology (such as the body), is an integral part of man, homo technologicus is not 'homo sapiens plus technology', but 'homo sapiens transformed by technology', so it is a new evolutionary entity, subjected to a new kind of evolution in a new environment[13]

The role of alterity in posthumanism is structural because it embodies in the identity: it actively promotes or "prune" certain evolutionary paths in the evolution of living beings. In this sense, then, Darwinian evolution must be corrected - or even replaced - by a new picture of evolution in which technology becomes the active tool of the developing process of entities.

The *technological evolution*, therefore, would be the new phase in which would enter the evolution of living, a process of hybridization, as seen, that has always characterized the development of every animal, but that today explodes in all of its power. The developments of the GRIN technologies, in fact, will allow us to create more efficient partnerships so that, perhaps, Homo sapiens today is already unhooked from the environmental needs. Today, the man has exceeded a threshold of evolution that has detached him from environmental difficulties and he finds himself in the unusual position of being able to design his own evolution.

4. The posthuman approach to the evolution, in summary, would like to completely rewrite not only the humanistic paradigm, but begin a thorough revision of the Darwinian mechanisms. The mutation, consequently, would not be the result of a random process but the result of the hybridization implemented through the alterity - today, mainly, the technology - to properly address the challenges of the environment. But is it really possible for such a revision? Is it really possible to talk about a hybridization that can direct the mutational process? But most importantly: is it really possible to link the development of living beings to their ability to adapt effectively to the environment?

Indeed, it seems that the posthuman approach to the evolution hides an *adaptationism* revised and corrected in which *the hybridization becomes the mechanism by which organisms simply gain a better position in the environment*. In fact, the key to survival of every species is placed, by posthuman, in the ability to adapt effectively to their own habitat which would be made possible by *mutational hybridization*: this dynamic allows a shift in the evolutionary pressure –that is, an environmental feedback– and, consequently, the modification of the genetic heredity to be transmitted to the descendants. Starting from a genetic plasticity outset, the DNA would be able to integrate the environmental feedback –mediated from alterity and aimed to optimizing the survival of the organism– thereby triggering the process of evolution and specialization of living beings to their ecological niche. Each hybridization is a threshold overshoot which corresponds to a better positioning in the environment.

But the difficulties for a mechanism of this kind, in our opinion, are strong and obvious. At first place, the technological evolution imagined by posthumanism requires the end of the barrier between the interior and exterior which is, according to Lewontin, the core of modern biological thought. As stated in the text *Not in our genes* also posthuman

> see organisms, human and non-human, as the result of adaptation to the environment through the process of evolution, that is 'equipped' by appropriate rearrangements of their genetic heritage, mutations, natural selection, to maximize their reproductive success in the environment in

13 Longo G. O., *Homo technologicus*, Meltemi, Roma 2001, p. 40-41.

> which they were born and developed. See also the undeniable plasticity of organisms –especially humans– in the course of their development, such as the modifications imposed to an organism essentially passive to the pressure of the environment" 'to which the organism itself is exposed and to which we must adapt or perish[14].

A process that very closely resembles *the heritability of acquired characteristics* of Lamarck for which each modification of the phenotype of an organism can change its genotype, making it inheritable by later generations. But, to achieve this, it is necessary to admit that «nothing separates what is outside from what is inside because external alterations would enter into the organism and be perpetuated in future generations»[15].

The theory of evolution implied by the posthuman thought, therefore, resembles the pre-modern biological thought, which seems to secretly revive those dynamics; even in posthumanism inside and outside must be able to "communicate" so that modification becomes a genotypic mutation. Once the hybridational event occurred, due to the redundancy of the genetic message, it will then be placed in the virtual genetics and made available for the next generation.

The separation between interior and exterior made by the epistemological revolution of Darwin, however, in addition to marking the difference with all previous theories prevents the possibility that the events of our ontogenetic development become fixed in the genotype transmitted as heritage. There is a fundamental impossibility of communication among somatic cells - what is changed from "mutant hybrids" - with germ cells - gamete, germ cell, gametocyte or undifferentiated stem cell - because the latter, in fact, are ready to inform the next generation. The characters acquired through mutations incurred in the hybridization with alterity can not in any way be transmitted; phenotypes, therefore, cannot influence the genes of future generations because what is being changed by the encounter with alterity are somatic cells[16].

The pre-modern thought, instead, unifies internal and external: in this sense, then, the particular mutations of structure and function are born «as a direct result of the need of the organism to adapt to the external world. Somehow the external forces altered the body through internal stress of the latter to adapt»[17]. As in the pre-modern thought, even in the posthuman external conditions can be

> incorporated in organisms permanently and inheritable by the will of the organism itself. Darwin created a rift in this fundamental cultural tradition alienating the inside from the outside, by introducing an absolute separation between internal processes that generate the bodies and external processes, the environment in which organisms must operate. In the theory of Darwin, variations between organisms are derived from an internal process, from what today is known as mutation and genetic recombination, which does not respond to the demands of the environment. The variants produced are then tested in an environment that exists independently of that variation. The process of changing is causally independent of the selection conditions.[18]

If it is true that the biological reflection needs a profound rethinking of the "classical" evolutionary dynamics - which are often considered to be insufficient and too "reductionist" - the posthumanism does not make any progress because, in reality, takes on the "dangerous" idea of Lamarckism, that is, «the existence of an orientation in the evolution»[19]. This orientation would

14 Rose S., Lewontin R.C., Kamin L., *Not in Our Genes: Biology, Ideology and Human Nature*, Pantheon Books, New York 1984, p. 49.

15 Lewontin R. C., *Biology As Ideology*, House of Anansi, Toronto 1991, p. 69. According to Darwin, however, the external world and the inner world were separated. The environment was testing the living being and what could better adapt could hope to reproduce.

16 Cfr. Boncinelli E., *Prima lezione di biologia*, Laterza, Roma-Bari 2001, 2011[9].

17 Lewontin R. C., *It Ain't Necessarily So: The Dream of the Human Genome and Other Illusions*, New York Review of Books, New York 2000, p. 60.

18 Lewontin R. C., *Gene, organismo e ambiente*, Laterza, Roma-Bari 2002, p. 36.

19 Gould S.J., *The Panda's thumb*, W. W. Norton, New York 1980, p. 79.

be to transform the human in a passive threshold determined by feedforward genetic caused by environmental feedback: each animal, consequently, would be the product of environmental thrust on genetic activity and shall regulate development.

The concept of mutational hybridization, then, reproduces the central node of the pre-modern biology; the possibility that the exterior changes and orients directly the internal development of the organisms, an orientation functionalized to the adaptive response of the organisms to environmental difficulties. But

> the internal forces that give birth to one mutation are, from the causal point of view, independent from external forces who select them. The inside and the outside, that is what we currently denote by the terms gene and environment, encounter themselves in the organism. This separation of internal forces from external forces outside, the interior from the outside, with the organism as their point of connection, it is crucial for the Darwinian thought[20]

The genetic mutation –as well as the recombination of DNA– is a random mechanism according to which «the changes do not follow a direction preferentially adaptive»[21]. The mutation is not a response to the environmental change, as well as the DNA is not a structure capable of accumulating experience or express competence. The genetic activity does not accumulate information deciding which genetic variant is more efficient to produce in a given environment in a given period. As pointed out by Mayr, in fact,

> the spontaneous mutation caused by an error in the DNA replication is very indicative of this cause of uncertainty. There is no relationship between the molecular event and its potential significance. The same applies to events such as the crossing-over, chromosome segregation, gamete selection, the selection of the partner, and for most of the phenomena related to survival. Neither the underlying molecular phenomena, nor the mechanical movements present in some of these processes have relationship with their biological effects.[22]

The process of mutation and recombination is deaf to the adaptive needs required from outside and does not ensure a higher possibility of "exit" to the most suitable genotypes. If Darwin has placed an emphasis on random mechanisms of internal processes, the posthumanism supports the adaptive orientation of the DNA.

In fact, the direct relationship that the posthumanism puts between inside and outside of organisms is oriented and functionalized at the adaptive response. But

> Darwin's view was essential to our successful unraveling of evolution. Lamarck was simply wrong about the way the environment influences heredity, and Darwin's alienation of the organism from the environment was an essential first step in a correct description of the way the forces of nature act on each other. The problem is that it was only a first step, and we have frozen since then. Modern biology has become completely committed to the view that organisms are nothing but the battle grounds between the outside forces and the inside forces. Organisms are the passive consequences of external and internal activities beyond their control.[23]

This consideration of Lewontin also reveals one of the key points of this technological evolution implicitly supported by the posthumanism. The direct relationa-

20 Lewontin, *It Ain't Necessarily So*, p. 60.

21 Gould, *The Panda's thumb*, p. 72. We always have to remember, however, that this randomness is not in the absolute sense but always linked to the concrete condition of the organism at that particular time, not all mutations have the same probability to appear because the "biological" randomness is not understood in a mathematical way.; cfr. *Ivi*.

22 Mayr E., *The growth of biological thought: diversity, evolution, and inheritance*, Belknap Press, Cambridge 1982, p. 58.

23 Lewontin, *Biology as Ideology,* pp. 69-70.

lity between inside and outside, in fact, it is actually directed by the pressure of the environment, so that its orientation is an adaptation merely passive, always-alreday facing the "best". If, in fact, every mutation is the result of a hybridization activated to respond to the environmental difficulties, the path of life is a journey necessarily toward the best.

A journey in which the randomness and error disappear according to a path constitutively targeted to increased performance of the living beings and man. A journey that transforms the rich and complex game of evolution in a path determined by the imperative of adaptation, an imperative that in posthumanism is declined in the forms of mutational hybridization. As well as in pre-modern biology, the living entity returns to be a passive object, made from the pressures of the outside to which it simply must try to match as best as possible. It will then be the selection mechanism to choose the most performing partnership and thus change the path of the phylogenetic species.

If the posthuman thought wanted to renew the interpretation of the natural dynamics, in our view, it turns into a very narrow and, in some ways, dangerous path. Any modification of the human beings, in fact, would be lawful because it wouldn't violate the natural way that aims to research the efficiency as its ultimate end. The technological evolution, consequently, would simply be the maximization of this process that the posthumanism wants "natural" but which, as seen, has a truly profound ambiguity.

5. This brief but dense survey on technological innovation supported by the posthumanism can therefore come to the conclusion and end with a brief reflection on the need to rethink the Darwinian mechanism of evolution. We believe that a breakthrough may be possible overturning the adaptationism that determines, in an implicit way, a good part of today's biological reflection. This doesn't mean to interpret the organism as the result of passive external forces but as the manufacturer of its own environment, a construction that in humans assumes the form of a real design. Human life is not a path already oriented and determined by the becoming of nature, but a fragile and contingent "lottery". A path of responsibility that we have the duty to engage, thus increasing our chances of winning. If it is true that biology entrusts us with a precise business, it is our vital activity avoiding a dangerous defeat.

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