Go Hack Yourself! Transparency Through the Lens of Biohacking[a]

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Abstract

L'antropologia e gli studi sociali hanno ampiamente studiato le culture del self-tracking, ma i potenziali risultati del "framework del biohacking" rimangono relativamente poco esplorati. Il biohacking incarna una forma distintiva di tecno-ascetismo moderno con le sue norme uniche di autoregolazione del corpo. Come verrà chiarito, questo paradigma stabilisce nuovi "spazi di visibilità" in cui le informazioni relative al corpo e alle sue funzioni interne sono rese trasparenti, organizzate e condivise. Tuttavia, l'intricata politica che circonda la scienza aperta trascende una dicotomia semplicistica tra trasparenza e chiusura. È necessaria un'esplorazione più approfondita delle attuali trasformazioni non solo all'interno della ricerca scientifica, ma anche dei quadri epistemologici ad essa associati. Partendo da queste basi, questo studio cerca di contestualizzare gli approcci antropologici contemporanei al corpo all'interno di un panorama più ampio, esplorando il loro allineamento con modelli distinti di elaborazione delle informazioni e culture sanitarie alternative che possono influenzare le risposte tipologiche al paradigma dominante stabilito dai discorsi sul biohacking che enfatizzano la trasparenza attraverso la raccolta dei dati.

Parole chiave: Biohacking, Trasparenza, Antropologia, Corpo, Itskov.

The realm of anthropology and social studies has extensively investigated self-tracking cultures, yet the potential outcomes of the "biohacking framework" remain relatively underexplored. Biohacking embodies a distinctive form of modern techno-asceticism with its unique norms for self-regulation of the body. As will be elucidated, this

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paradigm establishes novel "spaces of visibility" where information regarding the body and its internal functions is rendered transparent, organized, and shared. Nonetheless, the intricate politics surrounding open science transcend a simplistic dichotomy between transparency and closure. It necessitates a more profound exploration of current transformations not only within scientific research but also concerning its associated epistemological frameworks. Building upon these foundations, this study seeks to contextualize contemporary anthropological approaches to the body within a broader landscape, exploring their alignment with distinct models of information processing and alternative health cultures that may influence typological responses to the dominant paradigm set forth by biohacking discourses emphasizing transparency through data collection.

Keywords: Biohacking, Transparency, Anthropology, Body, Itskov.

1. Introduction

Biohacking, a term that has gained popularity in recent times, can be traced back to a 1988 article by journalist Michael Schrage in the Washington Post[1]. In this article, Schrage observed a subculture of individuals conducting techno-biological experiments in their garages. He contemplated the implications of perceiving life as something to be mapped out, comparable to a "computer program" with its outcomes manifested not on "papers" but on protein chains:

> What happens, for example, if future generations begin to see life as something that's manipulable – just another computer program, but one in which the printout isn't on paper but in proteins? If children grow up believing that life is nothing more than organic chemistry?[2]

Over the past thirty-five years, biohacking has not only endured but also risen in prominence, as the questions surrounding the understanding and manipulation of biological life at the molecular level have become increasingly urgent. From its origins, as an underground and secretive subculture operating within garages, biohacking has evolved into a *normalized* concept, frequently discussed in public discourse regarding citizen access to biomedical science and personal health responsibility[3].
Currently, the biohacking community encompasses various subgroups with distinct objectives. One common characteristic is that biohackers conduct biological, biomedical, or biotechnological experiments outside institutional settings such as universities or private medical companies. Proponents argue that biohacking is closely associated with self-tracking, therapeutic, and enhancement technologies that aim to

[1] M. Shrage, *Playing God in your basement*, «The Washington Post», January 31, 1988.
[2] *Ibidem.*
[3] M. Grewe-Salfeld, *Biohacking, Bodies and Do-It-Yourself. The Cultural Politics of Hacking Life Itself*, transcript, Bielefeld 2022, pp. 17-33.

explore one's "hidden biology", using technology as a tool for mapping and making it *transparent* and accessible to everyone[4]. Andrew Pickering describes it as an adaptive worldview and a "performative ontology of the black box" as functionally indispensable for cybernetics[5]. This same black box is reframed by Dave Asprey[6] who promotes his brand of self-experimental performance science by viewing his body as a system amenable to manipulation through experimentation on its input-output correlations. Similarly, Minna Ruckenstein and Mika Pantzar identify *transparency*, *optimization*, and *feedback loops* as grounding metaphors guiding the practice of self-discovery through data collection, driven by the idea of "quantifying life" to manage its constitutive feedback loops and correlations[7].

Members of biohacking maintain direct connections with the hacker movement. Their organizational structures frequently mirror those of *hackerspaces* (community-operated facilities) where individuals gather to partake in hacking activities and discussions related to computing. Notably, the "hacker ethic" embodies a codified set of moral principles. Steven Levy[8] articulates this ethic through several foundational tenets: unrestricted access to computers; the belief that all information should be freely accessible; skepticism towards authority[9]; assessment based on hacking expertise rather than traditional metrics such as academic credentials;

[4] Ivi, p. 222.

[5] A. Pickering, *The Cybernetic Brain: Sketches of Another Future*, University of Chicago Press, Chicago 2010.

[6] D. Asprey, *Head Strong - The Bulletproof Plan to Activate Brain Energy to Work Smarter and Think Faster - In Just Two Weeks*, Harper Wave, New York 2017.

[7] M. Ruckenstein, M. Pantzar, *Beyond the quantified self: thematic exploration of a dataistic paradigm*, «New Media & Society», 19, n. 3, 2017, pp. 401-418.

[8] S. Levy, *Hackers: Heroes of the Computer Revolution*, O'Reilly, Cambridge 2010.

[9] In this context, it is essential to highlight that since 2016, there has been a growing discourse among scholars and commentators regarding the concerns surrounding the nexus between the proliferation of misinformation and crises within democratic processes. This relationship has been shown to correlate with an increasing skepticism towards scientific authority and formal political engagement (A.M. Enders, J.E. Uscinski, M.I. Seelig, et al., The relationship between social media use and beliefs in conspiracy theories and misinformation, «Polit Behav», 45, 2021, pp. 781-808; M. Kim, X. Cao, The impact of exposure to media messages promoting government conspiracy theories on distrust in the government: Evidence from a two-stage randomized experiment, «International Journal of Communication», 10, 2016, pp. 3808–3827; E.C. Tandoc, D. Lim, R. Ling, Diffusion of disinformation: How social media users respond to fake news and why, «Journalism», 31, n. 3, 2020, pp. 381–398; S. Valenzuela, D. Halpern, J.E. Katz, J.P. Miranda, The paradox of participation versus misinformation: Social media, political engagement, and the spread of misinformation, «Digital Journalism», 7, n. 6, 2019, pp. 802–823). Within this context, the DIY biology movement arises as a proactive countermeasure to the proliferation of conspiracy theories and misinformation, thereby championing an alternative paradigm of scientific inquiry. Indeed, with the Internet evolving into a genuine mass medium, postmodern skepticism has catalyzed the formation of a novel scientific framework that skillfully utilizes all available codes offered by transmission media. This development is facilitated by the burgeoning "democracy" of cyberspace, which fosters narratives in which the individual subject is made visible and heard (M. Lock, Cultivating the Body: Anthropology and Epistemologies of Bodily Practice and Knowledge, «Annual Review of Anthropology», 22, 1993, pp. 133–155).

acknowledgment that artistic expression can thrive through computing; and the conviction that computers hold transformative potential for individual lives[10]. Notably, the practice of "hacking" as a means of generating foundational knowledge has subsequently evolved into a vast array of methodologies for managing the increasing production of data, thereby facilitating instantaneous exchange of information and its re-materialization through different coding operations, which result in a hybridization of different interaction strategies within the *digital milieu*[11].

Moreover, what distinguishes biohacking as a contemporary form of techno-asceticism focused on "self-improvement" is its simultaneous idealization of *nature* and the *machinic body* as metonyms. This idealization extends beyond technological innovation and incorporates a *biomimetic* approach, drawing inspiration from natural processes, emphasizing their innate capacities for healing, adaptation, and regeneration[12]. Remarkably, biohackers often seek to align their interventions with principles found in nature, in order to replicate or enhance its complexity, efficiency, and resilience within their own biological systems. However, this perspective tends to overlook the complexities inherent in the concept of *nature* itself, thus neglecting to recognize it as a space for contestation and politics[13].

A noteworthy precursor to this biomimetic approach is evident in an article that reported on the International Human Genome Sequencing Consortium's initial sequencing and analysis of the human genome. The authors of this comprehensive survey reached the conclusion that:

> Finally, it has not escaped our notice that the more we learn about the human genome, the more there is to explore: We shall not cease from exploration and the end of all our exploring will be to arrive where we started. And know the place for the first time[14].

As expected, the initial creation of the map did not represent the culmination of exploratory efforts. Instead, the following fifteen years have seen a remarkable proliferation in mapping activities, which shaped biohackers' ethos regarding *transparency*. This concept was envisioned by Donna Haraway, who articulated that "maps are models of worlds crafted through and for specific practices of intervening and ways of life"[15]. In this regard, the exploration envisioned by the authors

[10] A. Delfanti, *Tweaking Genes in Your Garage: Biohacking between Activism and Entrepreneurship*, in W. Sützl, T. Hug (eds.), *Activist Media and Biopolitics. Critical Media Interventions in the Age of Biopower*, Innsbruck University Press, Innsbruck 2012, pp. 163-178.

[11] M.G. Sindoni, *Spoken and written discourse in online interactions: a multimodal approach*, Routledge, New York 2013.

[12] A. Lindfors, *Between Self-Tracking and Alternative Medicine: Biomimetic Imaginary in Contemporary Biohacking*, «Body & Society», 30, n. 1, 2024, pp. 84-85.

[13] H. Helen, *Xenofeminism*, Polity, Cambridge 2018.

[14] International Human Genome Sequencing Consortium, *Initial sequencing and analysis of the human genome*, «Nature», 409, February 15th, 2001, pp. 860–921.

[15] D. Haraway, *Modest_Witness@Second_Millennium. FemaleMan_Meets_OncoMouse. Feminism and Technoscience*, Routledge, New York 1997, p. 135.

concerning the Human Genome Project, whose objective is "to arrive where we started" implies that once "life's inner workings are mapped and revealed by science" biology will have undergone a deep transformation, interrogation, and re-articulation. In fact, biological data that not only contain biological instructions that constitute our identity but are inscribed and shared in ways that are strategically intertwined with an extensive array of "institutions, procedures, instruments, practices, and forms of capitalization"[16].

The significance of this perspective lies in its elucidation of a new scientific epistemology, which ultimately contemplates the notion of an impending post-humanity or post-nature, arising from the profoundly transformative ethos of the "hackers culture" that is both facilitated by and facilitates "particular forms of institutional structures"[17]. Sunder Rajan articulates this change as "a shifting grammar of life, towards a future tense"[18]. Such an interpretation is inherently *linguistic* as it underscores how coding and programming are integral to processes of scientific expression and regulation that can be transcribed in various ways. Occasionally, this type of approach regarding exploration of "life" is framed as an *origin myth*: a return to primordial times when all was inherently "bio-based" rather than reliant on fossil resources underpinning contemporary industrial civilization.

The movement experienced significant growth in the United States around 2005 before spreading globally. However, it was not until 2008 that biohacking became organized at a societal level under the name DIY-biology in Boston. Remarkably, in Russia, biohacking became widely known in 2017 when an article by Sergey Faguet was published, detailing how he managed to become more energetic and reduce his biological age through detailed study of vital signs[19]. As he wrote one year later in his personal Facebook account[20]:

> You're a biorobot. Observe your programs. Rewrite ones that you don't like […] My aim was to enhance my vitality, well-being, happiness, self-assurance, determination, and intellect, while also enhancing my emotional state and focus, and

[16] N. Rose, *The politics of life itself*, «Theory, Culture & Society», 18, n. 6, 2001, pp. 1–30: 13-15.
[17] K.S. Rajan, *Biocapital: The Constitution of Postgenomic Life*, Duke University Press, Durham 2006, p. 14.
[18] The advancement of life sciences is transitioning from an ahistorical past toward a perpetually attainable horizon, striving towards fulfilling the promise of a future wherein science subjugates life and nature (S. Tamminen, E. Deibel, *Recoding life: information and the biopolitical*, Routledge, London, 2018, pp. 4-5).
[19] S. Faguet, *Мне 32 года, и я потратил $200 тысяч на "биохакинг"*, vc.ru, 2017. https://vc.ru/future/26886-personal-biohacking.
[20] Original source in Russian: Ты биоробот. Наблюдай свои программы. Перепиши те, которые тебе не нравятся. (…) Мне хотелось стать более энергичным, здоровым, счастливым, уверенным, волевым и умным, улучшить настроение и концентрацию, а также продлить свою жизнь. Последние 4-5 лет я занимаюсь биохакингом тела и разума с помощью логики и научного подхода. Для этого я оптимизировал сон, питание и тренировки, прошёл через тысячи тестов, принял десятки разных препаратов и сотни добавок (…) работал вместе с великолепными врачами, медитировал более тысячи раз, ходил к психотерапевту — и потратил на всё это примерно двести тысяч долларов. Translation by the authors.

> prolonging my lifespan. Over the past 4-5 years, I have been involved in the optimization of both physical and mental aspects through a methodical and scientific approach. This entailed refining my sleep patterns, dietary habits, and exercise routines; undergoing numerous medical examinations; […] engaging in meditation extensively; seeking therapeutic assistance - all resulting in an expenditure of approximately two hundred thousand dollars[21].

As such, whether in the guise of epistemological shift, enhancement, or information, the narrative of biohacking has two prominent consequences. On the one hand, it creates a new form of *transparency*. The "transparent body"[22] in the sense of a manageable entity, mapped through scientific tools can be seen as a direct outcome of development of sophisticated medical imaging and information technologies. This transparency now extends even to those spaces and structures in the sub-microscopic regions and is facilitated to a large extent by information technologies that allow for elaborate simulations. This instance underscores the ongoing emphasis within the field of biology and bioresearch on comprehensively investigating both the physical properties and the informational foundation underlying genetic data that create, to use Thomas Lemke's words, "spaces of visibility"[23] in which information about the body and its inner workings is made *transparent*, *intelligible*, *imaginable*. These spaces of visibility, as Lemke argues, do not just concern individuals: rather, genetic diagnostics offer predictive information about individuals but also their descendants, creating a "new, transgenerational transparency of the body"[24].

However, this transparency, as of now, is being interpreted: without this step of *translation*[25], the images and narratives circulating in (popular) culture would not be accessible for the lay public. In fact, as we will discuss later, transparency operates as an *ideology*, a syntagmatic organization of values[26] that substantiates technological advancements taking precedence over human existence. The distinctive features of this intricate mode of interaction, manifested through conglomerates of linguistic expressions, visual representations, and other non-exclusively linguistic codes, are manifold and span multiple fields of inquiry. The establishment of a new communicative reality that is increasingly recognized as *normative* necessitates a reassessment of the interpretive frameworks traditionally employed in scientific discourse analysis. It implies the need for methodologies that inevitably traverse theoretical domains from various disciplines: areas of study that may be partially

[21] S. Faguet, via Facebook, 2018. https://www.facebook.com/sergef/posts/10104132396121843.
[22] M. Chrysanthou, *Transparency and Selfhood: Utopia and the Informed Body*, «Social Science & Medicine», 54, 2002, pp. 469-479.
[23] T. Lemke, *Disposition and Determinism. Genetic Diagnostics in Risk Society*, «The Sociological Review», 52, n. 4, 2004, p. 555.
[24] *Ibidem*.
[25] D. Monticelli, *Borders and translation: Revisiting Juri Lotman's semiosphere*, «Semiotica», 230, 2019.
[26] A.G. Greimas, J. Courtés, *Sémiotique: dictionnaire raisonné de la théorie du langage*, Hachette, Paris 1979.

related or even distantly connected will find themselves interconnected in transdisciplinary ways.

Therefore, it becomes imperative to explore how transparency intersects with specific idiosyncratic reactions to prevailing societal norms, identifying the anthropo-semiotic elements that might shape specific *typological responses*[27] to this "ideology of transparency". Consequently, an inquiry arises: What is the precise relationship between transparency and cultural patterns (i.e. typology)? What prompts their current interconnection?

We posit that existing studies have not thoroughly explored the political and ideological implications of framing contemporary biohacking as a fusion of self-tracking with alternative or local cultures. As we will discuss, when data-driven self-monitoring is melded with a focus on a specific intellectual heritage, it gives rise to a biomimetic inclination that harmonize the normativity linked with techno-scientific orientations with cultural codes grounded in the typological features of a given culture[28].

To illustrate the structure of the text, we begin with an overview. The initial paragraph serves as an introductory section that addresses biohacking, methodologies, and objectives, while the final segment provides a conclusion or synthesis. The body of the text comprises two distinct sections: one characterized by an anthropological perspective (paragraph 2), aimed at examining the processes involved in "fabricating" human identity; and another section (paragraph 3) adopting an interpretative semiotic framework. This structural design is predicated on the notion that both perspectives can offer significant insights into the phenomenon under consideration, whether approached through a cultural lens pertaining to health-related dimensions or directed towards metaphysical considerations, as exemplified in paragraph 3.

In order to analyze the modalities of the "fabrication" of the human being, we will draw on hermeneutics in the anthropological field in order to outline some points of contact, especially with those aspects of "enhancement" that are central when talking about biohacking, and to open up those spaces of reflection that project us towards the dimension of the possible. The human body, in its broadest sense, may be considered a cultural construct, and thus a potential site for the examination of the various processes of implementation, trimming, and enhancement associated with the shaping of the human.

In this outlook, Itskov's theoretical framework is crucial for understanding the evolution of the normative aspects of openness and transparency that have emerged from biohacking. In fact, we argue that this phenomenon has catalyzed various idiosyncratic *responses*, necessitating a thorough examination of the *encyclopedic* dimension of "transparency", which constitutes the foundational methodological framework for our research. By utilizing this theoretical lens, we investigate how the

[27] V. Strada, *La questione russa. Identità e destino*, Marsilio, Venezia 1991.

[28] To deepen the concept of *typology* in culture, see: J. Lotman, B. Uspensky, G. Mihaychuk, *On the Semiotic Mechanism of Culture*, «New Literary History», 9, 1978.

phenomenon of transparency, as articulated by DIY biology, has engendered various yet interconnected *typological* responses concerning bodily transparency.

2. Anthropological considerations on the "fabrication" of human being

The term *biohacking* has been coined to describe a process of *reprogramming* that affects both the mind and the body of human beings. This process is intended to enable individuals to manage and alter their environment, thereby exerting control over their own biology. The objective is to optimize and update the biology in question.

The capacity to act upon the human body, including its biology, in order to modify, improve or create structural and functional changes at different levels, has been a constant feature of human cultures throughout history.

Many approaches in the field of (cultural and philosophical) anthropology have made interpretative contributions to this phenomenon. In addition to the concept of "anthropo-poiesis" (which will be discussed in greater detail later in this section), formulations such as Michel Foucault's "technologies of the self" or Marcel Mauss's "techniques of the body" find full legitimacy, not forgetting to mention the significant contribution of Peter Sloterdijk, who straddles the fields of philosophical anthropology and historical anthropology with his theorisation of "anthropotechnics". Foucault, for example, considers the human being to be a "recent invention"[29] and introduces the concept of the "technologies of the self":

> [...] which permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality[30].

In Sloterdijk's view, human beings are the result of evolutionary processes that occurred in the context of prehistoric hordes. These processes were characterized by a dynamic interplay between natural and cultural forces, whereby the evolution of human characteristics was shaped by a complex interplay of natural and cultural selection pressures. He is the proponent of the term "anthropotechnics", which denotes the techniques of "production" of the human being. This concept represents a focal point where individual and collective history converge, encompassing the process of hominization and the emergence of culture, the history of existence and the history of civilization. A further step in Sloterdijk's concept of anthropotechnics will situate the link between anthropotechnics and exercise at the center of his analyses. The author's attention will therefore be directed to individuals who, through the practice of exercise, are capable of acting upon themselves and the contexts in

[29] M. Foucault (1966), *The Order of Things: An archaeology of the human sciences*, Routledge, London-New York 2002 (2005).
[30] M. Foucault, *Technologies of the Self. A Seminar with Michel Foucault*, L.H. Martin, H. Gutman, P.H. Hutton (eds.), The University of Massachusetts Press, Amherst 1988, p. 18.

which they are situated, thereby modifying them and themselves[31]. The introduction of athletic-oriented anthropotechnics enables the subject to engage with cultural practices that have been deeply embedded in the evolutionary history of the species. It can be further postulated that biohacking may be regarded as a form of action directed towards established practices, thereby facilitating the autonomization and self-determination of the individual.

The notion of the human being as a product necessitates an analytical approach to understanding, whereby the production process is examined in its constituent parts. It is important to note that the human being is not a finished product, but rather a work in progress. The production of the human being is not a process that can be attributed to human agency. Furthermore, it was never the intention of humankind to create itself in this way. Prior to attaining the status of a fully formed human being, he existed in a state of becoming. The process of human development is seen to be closely linked to the concept of "home" and can be understood as a significant narrative of domestication[32].

The metaphor of the house presents a place that serves to stabilize the gap between the interior and the surrounding environment, thereby amplifying the contrast with the non-interior space. It is a space that is capable of securing its inhabitants, offering them a place in which to reproduce themselves[33]. The inherent vulnerability of the human condition compels individuals to confront the dual realities of their physical and emotional fragility, as well as their inherent restlessness and fluctuating motivations.

The conditions that lead to the formation of man, the entry into the *Lichtung* – the bearer of something prehuman that opens up towards man – can only be created through the action of four synergetic and interrelated mechanisms: insulation, liberation from bodily limitations, neoteny and transposition[34].

At the cultural level, there are also human shaping techniques through which human groups have been able to take care of their own symbolic and disciplinary shaping. These include the shaping of orders and forces (e.g. rituals, habits, codifications and social rules, etc.), which are appropriately referred to as "anthropotechnics". Such techniques are thus designated as such due to their indication of the direct shaping of humanity through a civilizing process[35].

Sloterdijk's suggestions and the concept of "anthropotechnics" certainly provide important stimuli for the study of the concept of "human fabrication" and for the analysis of the fundamental issues surrounding biohacking. In relation to the object of analysis of this paper, a recurring aspect seems to emerge that can be ascribed to biohacking practices and can be traced back to the communicative

[31] A. Sloterdijk (2009), *You Must Change Your Life: On Anthropotechnics*, Polity, Cambridge 2013, pp. 109-110.
[32] A. Sloterdijk (2001), *Not saved: essay after Heidegger*, Polity, Cambridge 2017, pp. 105-108.
[33] Ivi, p. 110.
[34] Ivi, p. 111.
[35] Ivi, pp. 126-127.

subtracks of various biohackers: the need to biohack one's own body and person arises from a deficit, a "lack of", and a simultaneous desire for "enhancement". This deficit (in the subtrack) is declined in the form of a lack of... information[36], health, health insurance[37], treatments, technology, and so on[38]:

> The general desire for – and cultural obsession with – a hacked, healthier or more efficient brain carries this promise [a happy, productive, extended lifespan]. This promise not only positions the human body as inherently deficient but also offers a solution to this lack: to use the tools of biotech to optimize the body[39].

In light of the aforementioned reasons, we will now direct our attention predominantly to a specific strand of anthropological thought that posits that the human inclination to act upon the human body, including its biology, with the intention of modifying, improving or creating structural and functional changes, is a consequence of the incompleteness of the human species. The human being is an "unfinished" animal, capable of completing and refining itself through culture, which is able to bridge the gap between what our body communicates and what we need to know in order to function[40]. This theme of man as an unfinished animal re-emerges in the second half of the 19th century in the philosophy of Friedrich Nietzsche and in the 20th century in the philosophical anthropology of Arnold Gehlen, who reconstructs this genealogy of thought from Herder. For Gehlen, the non-specificity of the human organism is the starting point of everything that is human, a living being biologically endowed with a "deficient equipment". Humans as "beings to be disciplined" are continually threatened by the inherent possibility of failure and, because of their incompleteness, are forced to structure themselves. This theme introduces the necessity of action in order to process - in and outside the self - nature and construct the specific sphere of his life, thereby showing openness to the world[41].

Human beings' innate constitution is as structurally incomplete as it is inefficient. Tools, hunting, social and family organization, art and religion, and even science have all contributed to the modification of the human body in a somatic sense, becoming fundamental elements for survival and, more importantly, for the fulfilment of the human condition[42]. The concept of incompleteness is not limited to the

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36 A. Wiggins, J. Wilbanks, *The Rise of Citizen Science in Health and Biomedical Research*, «The American Journal of Bioethics», 19, n. 8, 2019, pp. 3-14.

37 J. Keulartz, H. van den Belt, *DIY-Bio - Economic, Epistemological and Ethical Implications and Ambivalences*, «Life Sciences, Society and Policy», 12, n. 7, 2016, pp. 1-19.

38 J. Lee, *The Biohacking Manifesto: The Scientific Blueprint for a Long, Healthy and Happy Life Using Cutting Edge Anti-Aging and Neuroscience Based Hacks,* CreateSpace, South Carolina 2015.

39 M. Grewe-Salfeld, *Biohacking, Bodies and Do-It-Yourself. The Cultural Politics of Hacking Life Itself*, transcript, Bielefeld 2022, p. 144.

40 C. Geertz, *The Interpretation of Cultures*, Basic Books, New York 1973, pp. 48-50.

41 A. Gehlen (1940), *Man. His Nature, and Place in the World*, Columbia University Press, New York 1988.

42 C. Geertz, *The Interpretation of Cultures*, cit., pp. 82-83.

biological aspects of the human condition; it also encompasses the cultural component[43].

This different perspective attributes to culture an emptying operation, which has involved various aspects of the biology of the human being. The cultural element has been posited as a contributing factor in the fading of certain biologically regulated mechanisms, such as walking for food research. This has led to the emergence of a new form of incompleteness, possibly reproposed on another level[44]. The shaping role of culture in relation to human biology is characterized as a process of "pruning" and selection[45], whereby some options are chosen and others are discarded[46].

The concept of the "void" to be filled and the selection of certain options to the detriment of others inevitably leads us to consider human nature, both cultural and biological, as endowed with great plasticity[47]. This plasticity opens to the possibility of continuous redefinition and shaping of the constitutive form of human nature. From the perspective of the human brain, the processes of selection and deselection do not represent a deficit or something hostile; rather, they determine the conditions necessary to enable the brain to express its potential effectively.

In the context of *biohacking*, the concept of plasticity is of significant importance. It constitutes the material potential – of the brain, but also of the entire body – of living organisms, enabling bodies, whether human or animal, to gain a constant capacity for negotiation and exposing the contiguous aspects related to biology and embodiment. The plasticity of the brain is able to challenge the old separations between mind and body, culture and nature, thus blurring the distinction between brain and mind[48]. The vision of a plastic body would therefore seem to indicate the natural and biological human predisposition to operations of recalibration, reconfiguration and extension through the technological mediation, towards a variety of forms[49].

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43 F. Remotti, *Cultura. Dalla complessità all'impoverimento*, Laterza, Roma-Bari 2011.

44 Ivi, pp. 51-76.

45 The word hacker – from which hacking, present in the term biohacking – comes from the English "to hack" which means "to tear to pieces" or "to break", but it also means "to cut", "to reduce", "to trim", "to open a passage" (Cambridge Dictionary, Cambridge University Press, https://dictionary.cambridge.org), precisely between the lines of code that instruct software programs. The word describes the activity of assembling programs, with little regard for "official" methods, to improve the efficiency and speed of existing softwares.
It is intriguing to observe how the element of reduction, cutting, and trimming somehow evokes the shaping role of culture in relation to human biology. This can be viewed as a process of "pruning" and selection, whereby specific options are chosen for further consideration while others are rejected.

46 A. Favole, S. Allovio, *Plasticità e incompletezza tra etnografie e neuroscienze*, in F. Remotti (a cura di), *Forme di umanità*, Bruno Mondadori, Milano 2002, pp. 167-205: 199.

47 F. Remotti (1996-2011), *Fare umanità. I drammi dell'antropo-poiesi*, Laterza, Roma-Bari 2013, pp. 14-19.

48 V. Pitts-Taylor, *The Brain's Body: Neuroscience and Corporeal Politics*, Duke University Press, Durhman, 2016, pp. 4-5, 24.

49 A. Clark, *Re-Inventing Ourselves: The Plasticity of Embodiment, Sensing, and Mind*, «The Journal of Medicine and Philosophy», 32, n. 3, 2007, pp. 263-282: 278.

The notion that human beings can be shaped or modeled through such processes implies the consideration of the concept of *anthropo-poiesis*[50]. The principle of anthropo-poiesis, according to which, human beings are to be "modeled" and in a certain sense "constructed", is indeed a humanistic ideology, taken up by certain currents of cultural anthropology, but it seems to be an idea shared also by the natural sciences. This sharing primarily concerns the idea of *plasticity* and consequently that of *modeling*[51]. Human body is a bearer of potential; its use is not reduced to mere exploitation as a tool already given by nature, as Marcel Mauss suggests, but implies an act of modeling and training bodily functions and activities, also from an aesthetic point of view and in all the many forms that different societies and traditions have established. The notion of *techniques du corps*[52] dates back to 1936[53] and considers the body to be mankind's first technical object and technical means[54]. Mauss highlights how fundamental the intersection of the biological and the social is to the constitution of bodies as a set of "techniques"[55], e.g. examining how everyday activities such as walking, running or sleeping, appear contextualized, learned and taught, making the body adapt to its purpose in a social context[56]. Some of these simple activities are included in some proposed biohacking programs[57].

The term *anthropo-poiesis* comes under the category of terms that identify the idea of the formation and genesis of human beings. According to this theory, human beings are subjects to be constructed and shaped and, in a certain way, do not know only biological birth, but several births within society[58]. How many births do human beings know? One unavoidable birth is linked to childbirth, coinciding with the exit

[50] In Greek *poiesis*, from the verb *poiein* (to make), expresses the idea of modeling. The Greeks were the first to propose that human beings must be "shaped" (invented) in accordance with the (hidden, to be discovered) directives of "human nature".

[51] cfr. G.F. Azzone, *Perché si nasce simili e si diventa diversi? La duplice nascita genetica e culturale*, Bruno Mondadori, Milano 2010; cfr. L. Maffei, *La libertà di essere diversi. Natura e cultura alla prova delle neuroscienze*, il Mulino, Bologna 2011.

[52] M. Mauss (1936), *Les techniques du corps*, in *Sociologie et anthropologie*, Presses Universitaires de Paris, Paris 1950, pp. 365-386.

[53] This is the year of publication. The paper was presented to the Société de Psychologie on May 17, 1934.

[54] From this perspective, we could also interpret the Maussian body as the first and most immediate aesthetic object and means, capable of accepting aesthetic interventions or modeling, whether they are in the form of completion, ritualizable, or oriented towards the improvement and growth of the bearer.

[55] Each of the body techniques presents a bio-sociological phenomenon. Body education primarily entails training in the regulation and inhibition of disordered body movements, as well as the practice of consistently responding to external stimuli or one's own emotions. Concepts like "cold blood," presence of mind, and dignity for one's body, are elements that unite traditional initiations with the growth processes observed in industrial societies.

[56] E. Thacker, *What Is Biomedia?*, «Configurations», 11, n. 1, 2003, pp. 47-79: 56.

[57] A.R. Meisel, *Intro to Biohacking: How to Be Smarter, Stronger, and Happier*, CreateSpace, South Carolina 2014.

[58] S. Allovio, *Koino-poiesi. Progetti e costruzioni plurali fra i Medje-Mangbetu (Repubblica Democratica del Congo)*, in F. Remotti (a cura di), *Forme di umanità*, Bruno Mondadori, Milano 2002, pp. 129-147: 136.

from the womb. But this idea of birth (or rebirth) of human beings can be subject to significant transformations, to the point that they can be considered to be born several times. If the first birth takes on a physiological character, the second birth takes on a social connotation. A process that is literally invented and constructed within society, and in some ways "fake". The product of such births can change greatly depending on the purpose, giving rise to a process capable of generating something else[59].

Throughout history, this element of construction and fiction has been the subject of a number of rites. These rites – also fictional forms of representation – are capable of "fabricating" the human being, and are commonly referred to as "initiation rites" or "rites of passage"[60]. The concept of rite (of passage) in Van Gennep's traditional vision, implies an artificial subtraction from the context of everyday life, according to a three-phase division method: separation *(separation)*, transition *(marge)*, experience of liminality, and incorporation *(agregation)* reintegration into a new social position within the community[61]. It would be interesting to analyze the concept of liminality in relation to the theme of biohacking, which could perhaps be the subject of another future dissertation. In this context, we will limit ourselves to pointing out how the traditional tripartite conception of rite, according to Van Gennep, appears somewhat elusive in the context of biohacking as a contemporary expression, especially in relation to the instances of separation of individuals – raised in early modernity – from a wider social body and the concomitant process of differentiation that has taken place[62]. A process that is increasingly becoming more embedded in the individual and private sphere[63].

The advent of modernity has enabled men to dispense with such rituals, thanks to the discovery of their biological and scientific manhood[64]. Furthermore, we observe the diminishing significance of initiation rites, the loss of their public recognition, the dissolution of the individual's ontological transformation, and the capacity of these moments of transition to facilitate any form of spiritual and inner regeneration[65].

Following this idea of the second birth and "fabrication" of the human being, can we eventually reconsider the instances arising from *biohacking* with a perspective of reappropriating our own becoming human beings, although in a different form and with broader transformations than those encompassed by rites of passage?

The human condition is related to continuous reinvention. This task is frequently delegated to entities that are not human, such as other animals, machines,

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[59] F. Remotti, *Fare umanità. I drammi dell'antropo-poiesi*, cit., pp. 35-36.
[60] E. Comba, *Cannibali e uomini-lupo: metamorfosi rituali dall'America indigena all'Europa antica*, Il Segnalibro, Torino 1992.
[61] A. Van Gennep (1909), *The Rites of Passage*, University of Chicago Press, Chicago 1960, pp. 1-15.
[62] N. Elias (1939), *The Civilizing Process: sociogenetic and psychogenetic investigations*, Blackwell, Malden-Oxford-Victoria 2000.
[63] M. Segalen (1998), *Rites et rituels contemporains (3e édition)*, Armand Colin, Malakoff 2017.
[64] M. Eliade, *Birth and Rebirth. Rites and Symbols of Initiation*, Harper & Row, New York 1958.
[65] M. Aime, G. Pietropolli Charmet, *La fatica di diventare grandi. La scomparsa dei riti di passaggio*, Einaudi, Torino 2014.

or even entities that are not physical at all, such as gods or spirits. It is a fallacy to believe that becoming a human being occurs in a neutral, peaceful, and natural manner. Rather, this process is always undertaken in a particular, conflictual, socially negotiated, and culturally conditioned way. The term *anthropo-poiesis* refers to the process by which humans shape their own being, also with modifications involving the body (e.g. tattoos, scarifications, mutilations, implantations, etc.). This process can be constructive or destructive, and encompasses a wide range of behaviors and outcomes.[66].

This results in a space of randomness, which provides the opportunity to experience different forms of humankind and a multiplicity of viable paths and alternative models. The recourse to rituality, as well as to entities (ancestors, gods, nature, etc.), implies an aspect of urgency and a decisive reduction of the multiplicity of models and viable routes, including the aspect of arbitrariness. Spaces and times dedicated to these urgencies and moments of passage, (re)generation and "crisis", are configured as true *spaces of reflection* in which, on the one hand, human beings are "modeled" and, on the other hand, the inevitability, necessity or sacredness of the model adopted is emphasized[67]. This constructed and ritualized space for reflection becomes an opportunity to become aware of the ways in which we "make humankind". The engagement of entities to whom the tasks of "making" humanity are delegated entails an opacification of the process. However, some ritual forms adopted have also the task of unveiling the underlying fictional aspects, showing the transparency of the solutions adopted[68].

The human being elaborates and utilizes forms of culture to explain and shape the self. It is almost inevitable that this process will result in the realization of the arbitrary nature of the forms that are invented, experimented and then put into shape and work, or abandoned. The source of inspiration for such models may be ancestors, deities, other human societies or species, so that a number of reactions are possible: (1) the acceptance of the role played by the model's precariousness, with the unveiling of the fictional aspect on which the social structure is built; or (2) the affirmation of a successful anthropo-poiesis – revealed, found in nature, or conquered thanks to technologies – over the condition of human precariousness, concealing the limits of its own project. The second option (the concealment of such a process) appears particularly intriguing when compared to those religious traditions that have entrusted their divinities with the power to resolve problems associated with anthropo-poietic practice. The concept of being made in *God's image and likeness*, or being the direct fruit of his creative work, responds to this demand. The principal Christian and Western religious formulations, as well as those from analogous traditions, also fall within this category. This similarity between human and God, in Christianity, is further

[66] J.G. Herder (1887-1909), *Ideas for the Philosophy of the History of Mankind*, Princeton University Press, Princeton 2024.
[67] F. Remotti, *Fare umanità. I drammi dell'antropo-poiesi*, cit., pp. 47-49.
[68] E. Comba, *Cannibali e uomini-lupo: metamorfosi rituali dall'America indigena all'Europa antica*, cit.

emphasized following the coming of the Son of God among mankind and – through his sacrifice – the transcending of death.

Furthermore, the philosopher Francis Bacon[69] proposed that modernity would result in the establishment of the reign of humans on earth, a human being who would resemble God in his dominion over nature. The concept of progressive resemblance to God is so extensive that it encompasses the desire to conquer earthly immortality through technology, thereby overcoming the existential precariousness of human nature. By technologically dominating nature, to the point of thinking of defeating or overcoming death on earth, on the specific plane of the corruptible body, humans believe that they have acquired anthropo-poietic powers that are increasingly similar to those once attributed only to God. This is a process whereby a human becomes God himself.

This aspect is also present among many transhumanist movements – referring to the thought of Theillard de Chardin – positing the possibility of *human transhumanization*[70] and the realization of an evolution of the human species guided by the human being (master of his own destiny) thanks to his capacity for invention. A vision that encompasses the preservation of the individual body, or, as will be seen subsequently, the transformation into another (even immaterial) form, with the objective of achieving true earthly immortality. A future humanity so immersed in technology that it will be able to transcend its physical and biological constraints, attaining mastery over its own destiny and the capacity to determine the length of its lifespan, so that the entirety of the universe will be saturated by human intelligence – a machine intelligence (not biological) – determining its fate[71]. The technological development of modernity appears to be accompanied by a profound religious afflatus.

What are the prospects for a human being who is capable of transcending his corporeal essence, capable of determining his own destiny, and who has been raised to the status of a divinity? Is humanity becoming increasingly self-absorbed and attempting to fill its perceived deficiencies, or is it embarking on a path towards a new light?

3. Dimitrj Itskov and 2045 Initiative

Itskov, the founder of Immortality, a corporate joint venture, has embarked on a mission to develop an artificial body. In 2011, Itskov partnered with Timour

[69] F. Bacon (1620), *The New Organon*, L. Jardine, M. Silverthorne (eds.), Cambridge University Press, Cambridge 2000 (2003).
[70] P. Theillard de Chardin (1959), *The Future of Man*, Image, New York-London 2004, pp. 239, 294-295.
[71] R. Kurzweil*, The Singularity Is Near: When Humans Transcend Biology*, Viking, London 2005, pp. 35-38.

Shchoukine, a cognitive neuropsychologist to establish *Rossiia 2045* (Russia 2045)[72], a socio-political movement aimed at promoting radical life extension and urging the Russian government to embrace the construction of artificial bodies as a unifying "universal idea". His primary objective is to transfer the human brain and mind into a series of progressively advanced robotic bodies, initially merging man and machine but ultimately *transcending* physical embodiment altogether. The year 2045 is the date by which the movement's main endeavor, the *Avatar Project*, is to be completed[73].

In 2010, Shchoukine was approached by practitioners of *Advaita Vedanta*, a philosophical school of Hinduism in Nizhnii Novgorod, Russia. Intrigued by phenomena such as lucid dreaming and fascinated by brain activity, they sought Shchoukine's expertise in constructing biofeedback devices to enhance their meditative practices. During his involvement with this community, Shchoukine discovered that Itskov was a regular visitor to the ashram. This connection led them to collaborate on the development of a spiritual and technological protocol aimed at achieving a specific form of immortality, which significantly differs from other contemporary theories that strive towards transcending the body through technological means[74].

The initiative encompasses the achievement of its initial phase, designated as *Body A*, by the year 2020. This phase involves the development of a robotic body that is regulated through a brain-computer interface. Itskov asserts that advancements toward Body A have already been realized, referencing research on cerebral implants that empower individuals with disabilities to control robotic limbs or computer systems solely through cognitive processes. To further enhance their efforts, they engaged the expertise of Aleksandr Kaplan, a professor specializing in neurophysiology and neuro-interfaces at Moscow State University. Kaplan's research has been informed by the pioneering work of Soviet scientist Vladimir Demikhov, who conducted transformative experiments involving dog head transplantation[75]. Building upon these foundational concepts, Kaplan posited the feasibility of isolating and transplanting a head and brain into an independent corporeal entity, termed *Body B*. Subsequently, through discussions with Vitalii Dunin-Barkovskii – another significant contributor to the 2045 initiative and former director of the Neurocybernetics Institute in Rostov on Don – they conceptualized *Body C*, also known as Rebrain, an approach which entails the isolation of a distinct neural substrate[76]. The concluding phase of this project involves the development of a

[72] A. Bernstein, *The future of immortality. Remaking Life and death in contemporary Russia*, Princeton University Press, Princeton 2019.

[73] The main goals of the 2045 Initiative: the creation and realization of a new strategy for the development of humanity which meets global civilization challenges; the creation of optimal conditions promoting the spiritual enlightenment of humanity; and the realization of a new futuristic reality based on 5 principles: high spirituality, high culture, high ethics, high science and high technologies. http://2045.com/ideology.

[74] Ivi, pp. 51-55.

[75] Ivi, p. 80.

[76] Ivi, p. 54.

holographic entity, referred to as *Body D*, which Itskov likely encountered through teachings from his Advaita Vedanta spiritual mentor who introduced the notion of the "rainbow body"[77].

By the year 2045, Itskov envisions a future in which "substance-independent minds" are not merely uploaded onto computer chips but instead integrated into bodies composed of intangible materials. A holographic body, for instance, could possess the ability to traverse solid objects or operate at light speed, whereas a construct made of nano-robots would be capable of assuming multiple forms at will. In light of such changes, he posits that "Humanity, for the first time in its history, will make a fully managed evolutionary transition and eventually become a new species"[78].

While this vision may initially appear implausible, evoking parallels with the Organians from the "Errand of Mercy" episode in Star Trek[79], Itskov's intrigue with the holographic body stemmed from accounts of Tibetan masters attaining profound wisdom and compassion through dedicated practice, often accompanied by reports of rainbows manifesting upon their passing[80]. Notably, one of Itskov's most significant endorsements stems from the Dalai Lama, who advocates for these endeavors within a framework that emphasizes "ethical responsibility" and "reverence for life" which he asserts will ultimately benefit humanity[81]. However, Itskov not only seeks feasibility but also aims for accessibility across socioeconomic strata, aspiring for enduring impacts on society's trajectory.

At this stage, prior to delving into further elucidations concerning the notion of the "rainbow body" as reinterpreted through Itskov's theoretical framework, it is imperative to acknowledge that Project 2045 emerged from an intellectual milieu significantly influenced by bio-hacking principles and its associated speculative imagery, which substantially shaped the epistemological context surrounding its experimental endeavors[82]. Nevertheless, in order to effectively clarify the unique *typological* characteristics of the *transparency* concept as articulated by the 2045 Initiative,

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[77] C.N. Norbu, *Rainbow Body: The Life and Realization of a Tibetan Yogin, T.U. Tendzin*, North Atlantic Books, Berkeley 2012.

[78] C. Pinchefsky, *Dmitry Itskov Wants To Live Forever. (He Wants You To Live Forever, Too)*, «Forbes», June 18, 2013.

[79] *Star Trek: The Original Series*, Season 1, Episode 26, 1966.

[80] A. Bernstein, *The future of immortality. Remaking Life and death in contemporary Russia*, cit., pp. 53-55.

[81] Remarkably, this project has garnered support from prominent figures in various fields. Scholars such as roboticist Hiroshi Ishiguro, Ray Kurzweil (Google's director of engineering), and Peter Diamandis (chairman of the X-Prize Foundation) have endorsed Itskov's objectives during their presentations at GF2045 lectures.

[82] This episteme deserves recognition for establishing what is being discussed and how it is being discussed, thus constructing a common ground between different cultural systems. Foucault introduces the concept of episteme in his work *The Order of Things* referring to it as a framework defining the range of possibilities within which characteristic knowledge of a specific era is constituted and operates: an inherent set of rules for formation (and any meta-reflections on these rules) that enable discourses to function by discussing various themes along specific lines of coherence". (M. Foucault (1966), *The Order of Things: An archaeology of the human sciences*, Routledge, London-New York 2002 (2005), pp. 23-25).

it is essential to present a succinct overview of the intellectual lineage that informed such conceptualization.

In this scholarly context, the theoretical framework established by Itskov will be utilized to examine the degree to which a particular hypothesis regarding open access science, the re-codification of biological data within the digital environment, and the perspective that regards technology as subordinate to spiritual development, has contributed to the emergence of an epistemological paradigm that integrates scientific investigation with spiritual and socio-political considerations. In fact, as Itskov articulates, this initiative transcends mere veneration for physical immortality; it represents a conceptual framework designed to endure across temporal boundaries, aspiring to embody an eschatological archetype of humanity's future.

As such, within the realm of evolving epistemological paradigms and conceptual reconstructions geared towards bio-hacking the body and mapping its inner functions, "old" academic discussions regarding speculative futures have surfaced. This resurgence is shaped by unique ideological perspectives, which evolve based on particular "keys of accessibility" that originate from a specific cultural setting[83]. Remarkably, as various scientific-oriented practices seek to recalibrate the past toward constructing an improved society, Umberto Eco's concept of "possible worlds" becomes relevant, in order to explore how biohacking as a mainstream framework has been translated into one of the "internal languages" of a given *culture*[84]:

> The possible worlds as epistemic constructs are real in that they are embedded, not just syntactically, in the real world that produces them. [...] These "possibles" are not parallel; they are proportionally nested within each other, and each one participates to some extent in the reality of its container[85].

According to Eco, the ability to imagine possible worlds relies on the network of *shared encyclopedic knowledge* within a given community: this network enables the generation of inferences and the differentiation between possible worlds and the "real world", based on a plausible projective construction that is intricately linked to the logical articulation of the real world. These logical-semiotic systems are designed to narrate and propose the coordinates of a future possibility within a plausible scenario, whether real or abstract, always drawing on epistemic "keys of accessibility", which encompass political, social, scientific, intellectual and other subsystems that operate through ongoing processes of translation, based on dynamics of compatibility and incompatibility with a specific cultural system.

In this outlook, the significant rise of post-soviet Sovietology in the 1990s played a pivotal role in stimulating a reassessment of the Russian historical and intellectual heritage in light of the political and identity challenges of the post-Cold

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[83] U. Eco, *Lector in fabula*, Bompiani, Milano 1979, pp. 154-173.
[84] J. Lotman, *O semiosfere*, in «Trudy po Znakovym Sistemam», 17, 1975.
[85] U. Eco, *Sugli specchi e altri saggi. Il segno, la rappresentazione, l'illusione, l'immagine*, Bompiani, Milano 1985, pp.209-210.

War era[86], potentially justifying an entire *economy of anticipation*[87]. This intellectual heritage has experienced considerable resurgence, facilitated by the dissemination of previously unpublished materials related to Russian philosophy of religion and the inaugural publications of Nikolaj Fyodorov's groundbreaking theories by Svetlana Semyonova, alongside those of other Soviet thinkers[88]. As such, it is evident that initiatives aimed at maximizing individual effort in response to societal changes align with a historical continuum that stretches from Filokalia, Russia's late counterpart to "The Imitation of Christ", to Nikolaj Chernyshevsky's influential novel, "What Is to Be Done?"[89].

In this outlook, the advent of Project 2045, which pertains to the concept of a holographic body, is not an arbitrary occurrence; rather, it warrants analysis through the lens of the Bio-Cosmism movement and the *anthropo-technical* paradigm[90] predominantly articulated by Soviet Communism[91]. Indeed those epistemological categories were, to some extent, deconstructed after 1991, while simultaneously giving rise to what may be referred to as "metaphysical compensation chambers", environments where postmodern individuals may draw upon a renewed reservoir of cosmic belonging. Within these "chambers" new ideological supplements are emerging as a result of an exchange that involves the replacement of Judeo-Christian religious frameworks with what is termed "Western Buddhism". In the sense that its purported influence is characterized by its association with a cultural ambiguity, a

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[86] I. Perusko, *L'uomo sovietico sbarcò davvero sulla luna? Le trasgressioni di Victor Perelevin*, in L. Piccolo (a cura di), *Violazioni. Letteratura, cultura e società in Russia dal crollo dell'URSS ai nostri giorni*, Roma Tre Press, Roma 2017, pp. 83-97.

[87] In this outlook, the dimension of possibility possesses an encyclopedic nature, and should be understood within a rhizomatic constellation of possible worlds, each endowed with a topological property and a certain degree of operability. Notably, Anya Bernstein outlines that "Producing affective states of alternating hope and fear, such an ethos of preparedness requires action now to secure certain futures and avoid others. Anticipation produces political narratives of preemptive wars and dictates how we manage our financial futures" (A. Bernstein, *The future of immortality. Remaking Life and death in contemporary Russia*, cit., p. 11).

[88] M. Laruelle, *Totalitarian Utopia, The Occult, And Technological Modernity in Russia: The Intellectual Experience of Cosmism* in B. Menzel, M. Hagemeister, B. Glatzer Rosenthal (eds.), *The New Age of Russia. Occult and Esoteric Dimensions*, Kubon & Sagner, Munich 2012, pp. 238-258; see also D. Monticelli, *Thinking the new after the fall of the Berlin Wall: Juri Lotman's dialogism of history*, in «Rethinking History», 24, n. 2, 2020, pp. 184-208.

[89] The protagonist, Rahmetov, epitomizes a modern ascetic figure who subjects himself to extreme physical challenges, including sleeping on a bed of nails and adhering to a stringent dietary regimen.

[90] In 1926, the third volume of the Great Soviet Encyclopedia included the entry "Anthropotechnics". This term is defined as "an applied branch of biology that aims to enhance both the physical and spiritual qualities of humans using methods similar to those employed in zoology for the improvement and breeding of new domestic animal breeds" (in B. Groys, M. Hagemeister (eds.), with collaboration from A. von der Heiden, *Die Neue Menschheit. Biopolitische Utopien in Russland zu Beginn des 20. Jahrhunderts*, Suhrkamp, Frankfurt am Main, 2005, p. 54).

[91] A. Sloterdijk (2009), *You Must Change Your Life: On Anthropotechnics*, Polity, Cambridge 2013, pp. 391-392.

phenomenon that aligns with Zizek's well-documented critique[92], and which can be linked, to some degree, to a certain spiritual priority (implied as a gnoseological category) attributed to the East[93].

The Anarcho-biocosmists represented the most politically active segment within the ideological framework of the anarcho-futurist movement. Emerging around 1920 in Moscow, with significant activities also noted in Petrograd, this group explicitly endeavored to realize to initiate a program for Lenin's resurrection, culminating in 1926 with Alexander Bogdanov's establishment of the Moscow Transfusion Institute (*Institut perelivanija krovi*); an ostensibly nominal institution aimed at advancing a revolutionary medical theory known as *physiological collectivism*. Within this framework, Marxism was regarded as an irrefutable doctrine capable of actualizing immortality through scientific advancements while social revolution was perceived as an initial step toward fundamentally reshaping *reality itself*. Svjatogor, the author of the Biocosmism Manifesto (1922)[94], subjected the classical doctrine of Russian anarchism to a fundamental revision, integrating it with the necessity of conceptualizing immortality as a political objective: an ultimate principle to be pursued in order to guarantee the new socialist individual an inalienable right to immortality. Svyatogor viewed immortality as both the goal and prerequisite for a future communist society, positing that true social solidarity could only be established within a society of immortals: "death separates people; private property cannot be eliminated until time is collectivized" (1922).

In this perspective, total biopower would inherently necessitate the collectivization not only of space but also of time, thereby eliminating conflicts between the individual and society. Notably, Dmitry Shlapentokh observed that:

> The Bolshevik Revolution [...] implied not only social changes (e.g. absolute social harmony), but metaphysical-transcendent changes as well. This feeling of eschatological excitement was in various measures an element of all great revolutionary transformations [...] Toppling the Russian monarchy would lead not only to political but also to *cosmic changes*. [...] The same eschatological expectations arose during the Bolshevik Revolution and one might say that in the mind of many Russian intellectuals the Bolshevik Revolution had two "layers"; so to speak; one was social, the other millenarian[95].

In such a light, the anthropo-technical aspect of the 1917 Revolution commenced with Russian intellectuals's engagement with this phenomenon, coinciding with a transformation in the Western conception of political revolution

[92] S. Zizek, *Self-Deceptions. On being tolerant and smug*, «Die Gazette», August 27, 2001.
[93] A. Sloterdijk, *You Must Change Your Life: On Anthropotechnics*, cit.
[94] A. Svjatogor (1922), *The Biocosmist Manifesto*, in B. Groys (ed.), *Russian Cosmism*, MIT Press, New York 2018.
[95] D. Shlapentokh, *Bolshevism as a Fedorovian regime*, in «Cahiers du monde russe : Russie, Empire russe, Union soviétique, États indépendants», 37, n. 4, 1996, pp. 429-465.

that fundamentally depoliticized it, thereby rendering it a radically "meta-ontological experiment"[96].

In this perspective, as Sloterdijk posits, one might even assert that politics was infiltrated through the lens of *orientalization*. In this context, the term "East" denotes a propensity for the predominance of the spiritual dimension, a factor that persisted in exerting influence following 1991. It is posited that the emergence of the *hologram body* project would not have been possible without this underlying spiritual conversion, which keeps mirroring an extensive process of external transformations[97].

These elucidations are crucial for contextualizing this phenomenon while simultaneously offering a valuable framework for comprehending how cultural expressions became subjugated under the symbolic authoritarianism inherent in Soviet political ideology, while intricate interactions intertwining communism with religious elements began to permeate into the mythological fabric of early twentieth-century Russian society.

Indeed, the exploration of the relationship between biohacking and Leninism/Bolshevism is fundamentally contentious and poses significant challenges when attempting to offer interpretative insights that can reconcile Itskov's trajectory with Soviet political ambitions in the aftermath of the pivotal events of 1991. However, as will be clear in the next paragraph, two fundamentally opposing conclusions regarding biological futures emerge, each presenting itself as a grand narrative with significant geopolitical ramifications. Both narratives share a symmetrical focus on the necessity of transcending physical limitations while simultaneously converging on the imperative for humanity to act collectively in a manner that aligns with societal advancement. At the core of both discourses lies a recognition and aspiration to surpass current constraints on life, envisioned as a technological construct, while also invoking a "return to nature," suggesting an endpoint which is notably close to that envisioned by the novel paradigm of inquiry established by bio-hacking.

Based on these premises, we argue that biohacking establishes an epistemological foundation where bodily functions and chemical-molecular processes are situated within a broader interconnected paradigm in which all material and psychic aspects are interrelated, suggesting a reevaluation of humanity's place within the cosmos, and prompting a reflection on the physical and chemical dynamics within the human body as part of cosmic processes. This approach introduces innovative perspectives that might shape contemporary investigations on the *auto-poietic* potentialities inherent in the human body and matter itself, encompassing behaviors, experiences, physiological and chemical processes that may challenge traditional

[96] A. Sloterdijk, *You Must Change Your Life: On Anthropotechnics*, cit.

[97] The term "conversion" denotes a spiritual recalibration of existence, while "revolution" involves reimagining reality from a foundational perspective. Within the revolutionary crucible, matter previously fixed in various qualities is transformed into potent potentiality, harnessed for innovative endeavors (A. Sloterdijk (2009), *You Must Change Your Life: On Anthropotechnics*, Polity, Cambridge 2013, pp. 390-392).

understandings of human functionality and humanity's position within the cosmic order.

These perspectives prompted contemplation on resurrection and spiritual advancement, central themes in Itskov's belief, previously explored by the eminent philosopher Nikolaj Fydorov, whom Itskov undoubtedly is familiar with[98]. In this outlook, while certainly not interested in erasing the peculiarities of different religious traditions or in turning Tibetan Buddhism and Fyodov's unique interpretation of Christianity into masks of the technological, Itskov makes a number of daring claims, suggesting that there are peak mystical experiences in those traditions that share intriguing similarities with Konstantin Tsiolkovskij theory of *pan-psychism*, even if it's certainly not possible to affirm their identical character[99].

Remarkably, he describes *Body D* as a "body of light" and points Tsiolkovsky, regarded as the father of Russian space science, as part of his intellectual lineage. Tsiolkovskij discussed replacing biological bodies with others composed of pure energy, referring to it as *radiant mankind* (*luchistoe chelovechestvo*), putting an equal or even superior emphasis on studying the spiritual characteristics of matter over pursuing mere physical enhancement through technological means.

At this juncture, it becomes imperative to delve further into Tsiolkovskij speculations, who provides an interesting perspective to discuss specific idiosyncratic reactions to the concept of *autopoiesis thought transparency* established by the biohacking framework which we previously elucidated. As evidenced in the subsequent passage, the scientific ambitions of pan-psychism are currently undergoing a reevaluation by Itskov; this reassessment aligns with the *translation* of biohacking theories away from conventional frameworks towards new epistemological paradigms that prioritize matter as a pathway to directly engage with immortality itself. Crucially, Tsiolkovsky posited that the pinnacle of human intellect would not be achieved through biological methods but rather by tapping into electromagnetic fields. He introduced the concept of *cosmic matter* evolving within the brains of higher organisms into an irreversible state of radiant energy, imbued with a unique cosmic consciousness that permeates space. Once achieving such a state, humanity would bask in *eternal existence* and *salvation*.

This notion, while not novel, aligns with Einstein's mass-energy equivalence formula. However, Einstein's formula pertains to matter as it currently exists and is inherently reversible, as its asymmetry does not stem from the formula itself[100]. Tsiolkovskij hypothesizes a type of matter whose transformation into energy or radiation is one-sided and irreversible; this irreversible transformation will

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98 A. Bernstein, *The future of immortality. Remaking Life and death in contemporary Russia*, cit., p. 58.

99 K. Tsiolkovskij (1925), *Monizm svellenoj*, in S.G. Semënova, A.G. Gačeva (eds.), *Russkij kosmizm*, Nauka, Moskva, 1993.

100 The reference to Einstein pertains to his equation $E=mc^2$, signifying that matter can be converted into energy (in the form of radiation) and vice versa. A prime example of this concept is nuclear reactions: during fission, a heavy atom splits into two lighter ones. The final mass (sum of both lighter atoms) is less than that of the original atom due to the missing mass being transformed into energy. Nevertheless, this equation does not dictate a specific directionality.

characterize the terminal phase of the cosmos, at which point a directional arrow might be added to Einstein's equation. This subtle addition would convey profound insights to future super-humans, as these advanced beings will not require matter but *energy* and their cosmic purpose will have been fundamentally resolved:

> Matter is one existing thing, regardless of its movement or displacement in space. Deeper knowledge of the structure of matter is not yet available to us. But someday there will come a turning point when mankind will approach this "esoteric" knowledge. Then it will come close to the question: why? But for this to happen, billions of years of the space age must pass [...] Rockets, the second beginning of thermodynamics, are the business of our day, but at night we live a different life if we ask ourselves that *damned question*. (i.e. Why?) And there is another important point: the question about the *randomness* or non-duality of matter was raised by the ancient sages. They taught that there is a spiritual world where "there are neither tears nor sighs, but endless life". The idea of the "randomness" of matter came to my mind after I learned that the average mass density of matter in the galaxy [...] occupies a vanishingly small volume in comparison with the volume of "empty" space[101]. Thinking further [...] the smallness of matter speaks of its randomness or temporality, because everything random or temporary has a small or vanishingly small value. [...] What is the implication of this? [...] a random quantity can disappear someday: either its lifetime will end, or, speaking the language of physics, it will be transformed into radiant energy. Generally speaking, small quantities and values are absorbed without residue by large ones, and this happens the sooner the greater the difference between large and small values, and here we have a colossal difference equal to 10^{33}. [...] It's a kind of monism. A monism. But don't think of it as entropy! God forbid, entropy will not exist in that world either, as it does not exist in this one for open systems[102].
>
> I am a pure materialist. I acknowledge nothing but matter. I see only mechanics at work in physics, chemistry, and biology. The entire cosmos is merely an endless, complex machine. Its complexity is so great that it borders on the arbitrary, the unexpected, and the accidental [...] Various parts differ only in the degree of their sensitivity, which varies continuously from zero to an indefinitely large magnitude in supreme beings, that is, in beings more perfect than people. [...] Everything is continuous; everything is one. The degree of sensitivity depends on the combination of matter. [...] In terms of mathematics, the entire universe is alive, but the power of its sensitivity is manifested in all its brilliance only among higher animals. All atoms of matter feel in keeping with the environment. Finding itself in highly organized beings, atoms live their lives and feel their pleasure and pain. If they find themselves in the inorganic world, they sleep, as it were, immersed in a deep state of unconsciousness, in nothingness [...][103].

[101] The Universe is predominantly characterized by vast empty spaces. While a planet may be highly dense, the void between planets is essentially prevalent. This principle extends to stars within a galaxy and galaxies within the universe. Ultimately, when averaged out, the density of the Universe (i.e., the number of atoms occupying a certain volume) is exceedingly low.

[102] The text is an interview between Alexander Chizhevsky and Konstantin Tsiolkovsky (1932) and is given according to the first publication in the journal «Chemistry and Life» (n. 1, 1977). https://www.tsiolkovsky.org/en/the-cosmic-philosophy/the-theory-of-cosmic-eras.

[103] K. Tsiolkovskij, *Panpsychism, or Everything Feels*, in B. Groys, *Russian Cosmism*, MIT Press, New York, 2018, pp.133-136.

> [...] Since all material, under favorable conditions, can always go into an organic state, theoretically we can say that inorganic matter is potentially alive.

The extracts regarding pan-psychism of matter suggest an implicit emergence of a new concept of transparency, wherein the notion entails the capacity to circumvent intermediaries, such as the body and its material substance, and directly engage with the energy of the universe. This direct engagement is facilitated by an irreversible interplay between energy and matter, elucidated by Einstein's equation E=mc2. It is therefore presupposed that "corporeal data" can hold significance autonomously from the intricate networks and relationships in which they are currently embedded, as well as apart from the scientific domain through which they are *constructed*. Intentionally or unintentionally, the proper semiotic dimension of the body is therefore obscured. In concrete terms, this implies that information concerning the body and its internal mechanisms, formulated through scientific methodologies and explained by the principles of physics, acquires intrinsic autonomy due to a sequence of interconnected procedures and dialogues that permit its placement within the same epistemological framework.

In this regard, these criteria of accessibility and transparency, which aim to bypass intermediaries and present us directly with body data and subsequently with physical mechanisms imply that in a distant future matter will become neutral itself, lacking its semiotic function of mediation. We could then suppose that this type of interaction has an influence on how to interpret the content of the data itself, thus framing a horizon of expectation regarding the kind of possible-world being portrayed.

In other words, this framework for interpretation may imply that if we believe in the reality of the world depicted in a data, nature as "thinking matter" should also obey the mode of interaction that led to it (physics).

In this context, the 2045 movement undertakes coordinated endeavors for societal reformation on a political level by aiming to democratize biology and establish a unified platform encompassing means of production, scientific research, and data collection. Moreover, it distinctly demonstrates a tendency towards revitalizing traditional scientific and emerging religious paradigms in order to formulate a novel form of (supposedly) neutral ideology, but which actually functions as a perfect ideological supplement.

4. Conclusions

As elucidated by our reflections, the emergence of the epistemological paradigm of bio-hacking demands a revision of *interpretive parameters* adopted in scientific discourse analysis up to this point. It suggests the adoption of approaches that, given the complex nature of the subject matter, invariably encroach upon theoretical domains from diverse backgrounds: fields of study that are partially related but sometimes distantly connected will find themselves interconnected transversally. However, as we

have consistently emphasized, it is precisely during certain historical periods that specific modes of inquiry surrounding the concept of transparency become infused with ideological, political, and cultural values capable of expressing themselves even through specific cultural representations.

In such a light, it has been observed that the "construction" and "fabrication" of the human being is of great importance in the context of human cultures. Each culture assumes a specific anthropological, rather than symbolic, model for itself. A process that affects both the social and the biological spheres. Some aspects of the process, eventually *anthropo-poietic*, and the chosen models of "making humanity" also involve some dramatic aspects, such as modifications and interventions on the body, which may be disabling (e.g. amputations) or additional (e.g. implants). These take the idea of being human to a different level and demonstrates that the process of becoming a human being is not a neutral and uncontracted one, even in terms of one's relationship with one's social context.

The diverse and idiosyncratic ways in which each culture conceptualizes humanity, if on the one hand they demonstrate its provisional and fictional nature, on the other hand they can lead to the assertion of its success, concealing its limitations and fragility.

The second assumption of the concept of *anthropo-poiesis*, for example, can lead to the idea of overcoming precariousness and to the assumption of a form of "domination" and control over time and space. This enables the transcendence of the idea of death. The same concept can be informed by contributions from both religious and technological sources. One potential outcome of this is the possibility for humanity to sublimate its corporeality in favor of a projection towards a horizon of immortality.

A paradigmatic illustration of this phenomenon is the emergence of novel epistemological frameworks that facilitate an increasingly "creative practice" in engaging with scientific inquiry, distinguishing themselves both independently and eccentrically from traditional institutional forms. The narratives, beliefs, and practices linked to the scientific exploration paradigm established by bio-hacking engender a manifestation of disquieting speculative imagery. This imagery arises from the re-codification of biological data within the digital environment, which at times may be perceived as "spiritualized."

Nevertheless, it is essential to clarify that despite the diversity of narratives involved, what remains constant in these speculations regarding the future of human nature is the fundamental structure through which varied experiences are categorized. This structural framework subsequently informs cultural trajectories and ideological impulses characteristic of those experiences.

In this perspective, the examination of the 2045 Initiative, along with a deliberately constrained yet adequately representative range of discussions, has concurrently unveiled two fundamental points: the extensive variety of meanings and potential discourses through which the concept of transparency is articulated and the significance of the typological viewpoint that encapsulates them. Furthermore, it

emphasizes the potential for categorizing this array within an emerging epistemological paradigm of speculative inquiry, as the intended interpretation of a particular corporeal representation of immortality serves as an effective instrument for evaluating the anthropological identity of a culture in relation to its historical context. Consequently, it is imperative to investigate transparency as an elusive semantic spectrum whose shifting significances, manifested in texts and discourses, reveal deeper insights into the culture articulating them at any given historical moment. This naturally establishes a foundation for contemplation that warrants further exploration through widely disseminated texts. It presents a compelling point of departure for examining the evolution of highly intricate and nuanced scientific classifications alongside cultural sensibilities.