

Biolaw, digital hyperconsumption and cognitive vulnerability: Towards a biojuridical resignification of bioethical principles for the protection of cognitive health¹

Biodireito, hiperconsumo digital e vulnerabilidade cognitiva: rumo a uma ressignificação biojurídica dos princípios bioéticos para a proteção da saúde cognitiva

Camilo Noguera Pardo²

Alejandro Castaño Bedoya³

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² Postdoctorate in Bioethics, Public Health and Global Sustainability at the American University of Sovereign Nations. Postdoctorate in Bioethics from the El Bosque University, Colombia; Ph.D. in Bioethics from the same university; Master and Specialist in Teaching and University Research from Sergio Arboleda University, Colombia; Lawyer from Sergio Arboleda University, Colombia; Graduated in Higher Studies of Philosophy, Literature and Humanities from Sergio Arboleda University, Colombia; Advanced Studies in Literature Spanish and Hispano-American from the University of Barcelona, Spain. Member of the International Network of Biolaw, the Colombian Institute for Bioethical Studies and the Center for Colombian Studies. Co-founder and Editorial Director of the Colombian Journal of Hispanic Studies (Colombia-Spain), since 2019. Author, co-author and academic editor of books and scientific articles published by mainstream publishers.

³ PhD in Philosophy and Lawyer from the Universidad Pontificia Bolivariana, Colombia; Ph.D. in Philosophy and Canon law from Universidad Pontificia Bolivariana Colombia; Magister Scientiarum of the Universidad del País Vasco, España. Member of the International Network of Biolaw EEUU and the Colombian Institute for Bioethical Studies in academy of medicine; Founder member of the Latin American Network of Law and Society (RELADES); Research professor of Catholic University of Colombia, attached to research cambios y transformaciones en las instituciones del derecho privado: hacia un derecho privado centrado en la eficacia de los derechos constitucionales y convencionales-fase I. Physics coordinator of law and bioethics in post doctorate in Reggio di Calabria University. E-mail acastano@ucatolica.edu.co.

Abstract

Cognitive health is necessary for human development. However, the hyperconsumption of biotechnologies (smartphones, internet, video games, social networks, virtual reality) can cause damage to cognitive health and, therefore, to human health and development. Consequently, such research focuses on limiting the consumption of specific technologies in minors in order to protect their health. This research is divided in five parts: the contextualization on the colonization of biotechnological consumption; a diagnosis of neuronal violence and consequences for human development; a review of the cognition sequelae due to the abuse of biotechnologies, based on selected medical research; an exposition on the necessary relationships between the moral order and the legal one, from philosophical realism and natural law approaches; proposal of minimum fundamental rules, based, in turn, on a biojuridical specification of principles to protect cognitive health, which serve as preliminary support to elaborate a future *Universal Declaration for the Protection of Cognitive Health*, as an essential biological basis for human development.

Keywords: Bioethic. Biolaw. Cognitive Vulnerability. Digital Hyperconsumption. Protection of Cognitive Health.

Resumo

A saúde cognitiva é necessária para o desenvolvimento humano. No entanto, o hiperconsumo de biotecnologias específicas (smartphones, internet, videogames, redes sociais, realidade virtual) pode causar danos à saúde cognitiva e, portanto, afetar o desenvolvimento humano. Consequentemente, tal pesquisa se concentra em analisar a limitação do consumo de tecnologias específicas em menores e idade, a fim de proteger sua saúde cognitiva. Esta pesquisa é dividida em cinco partes: a contextualização sobre a colonização do hiperconsumo biotecnológico na vida; um diagnóstico da violência neuronal e consequente prejuízo ao desenvolvimento humano; uma revisão a respeito das sequelas na cognição devido ao abuso de biotecnologias, com base em pesquisas médicas selecionadas; uma exposição sobre as relações necessárias entre a ordem moral e a jurídica, com base nas abordagens do realismo filosófico e do direito natural; e propostas de regras mínimas fundamentais, baseadas, por sua vez, em uma especificação biojurídica de princípios de proteção à saúde cognitiva, que sirvam de suporte preliminar para a elaboração de uma futura Declaração Universal para a Proteção da Saúde Cognitiva, como base biológica essencial para o desenvolvimento humano.

Palavras-chave: Biodireito. Bioética. Hiperconsumo Digital. Proteção da Saúde Cognitiva. Vulnerabilidade Cognitiva.

Introduction

Globalization has come and nobody knows very well how it has been. It has taken us by surprise. That Marshall McLuhan's global village has become a reality. The globalization of communications and information has allowed the globalization of financial markets, as well as of the production and trade of goods and services. This economic globalization has not been accompanied, at least until now, by the necessary political globalization and, even less, by an ethical globalization. Hence, in recent times there has been an extensive literature on "ethical globalization" (remember the somewhat frustrated and frustrating efforts of Hans Küng to promote what he calls *Weltethos* or Global Ethics), and, of course, the "Bioethical globalization"⁴.

Currently, we do not even know - in the present stormy process of globalization - where some crimes were committed: the principle, fundamental in the order of the last centuries, of territoriality of the norm is declining. The new topics related to the environment and bioethics (it is enough to refer to genetic manipulations) do not seem minimally controllable within the traditional scheme emerged in the era of coding. Instead, the State reacted by taking the production of legal norms to a paroxysm: thus, positive law developed two completely anomalous features regarding the Western legal tradition, pervasiveness and self-referentiality.⁵

Biotechnologies⁶ have modified the ways of relating to reality. Human, animal and plant beings are traversed by biotechnology. In a simpler way: biotechnology has colonized the world and established a symbiotic relationship to the living itself, in general, and to the human species, in particular. However, there is a lag with respect to biotechnology regulation.

The epigraphs that we use in this introduction show precisely that globalization lacks an ethical character and, even more, a bioethical and a biojuridical one. And this last deficiency (the biojuridical one), connotes an enormous

⁴ GUILLÉN, Gracia Diego. **Los retos de la bioética en el nuevo milenio**. En, Mercadé Blanco, A. y Núñez Cubero, M. P. *La bioética y el arte de elegir*. Madrid: Asociación de bioética fundamental y clínica, 2014. p.30.

⁵ PRODI, Paolo. **Una historia de la justicia**. De la pluralidad de fueros al dualismo moderno entre conciencia y derecho, 2008. p.13.

⁶ In essence, we use the concept biotechnologies and not technologies or technosciences for the following reason: technologies have penetrated existence in all its dimensions, until modifying the bios (biological life) of beings. That is why we prefer biotechnologies to technologies. In simple, life and technologies, in the XXI century, have developed a symbiotic relationship. So that, since the technologies could no longer be conceived as parasitical upon the subject, but rather embedded in the bios, the concept of biotechnologies takes full effect. In that sense, we understand and write it.

danger for the global world that can be appreciated when observing different biotechnological realities and, consubstantially, their regulatory absences.

Cyborgs (bionic bodies, bionic minds, androids); computerized brain interfaces; molecular computers; preimplantation genetic diagnosis; biogerontology; procreative beneficence⁷; eugenics; euthanasia; orthothanasia; distanasia; abortion; genital reassignment; gene therapies -multifactorial, chromosomal and monogenic-; DNA banks; predictive medicine; artificial intelligence; animal transgenesis; bioremediation; clean technologies; nanotechnology; exo-entities and post-biological existence; military robotics; global pharmacology; and embryo culture in the laboratory are some of the biotechnological advances and promises, which are part of the human being's reality and its near future.

However, several of these realities generated by biotechnologies lack regulatory frameworks. We are referring to the absence of normative specifications, of a biojuridical⁸ nature. This, of course, entails different problems for theoretical research, for applied research and for State policies related to biotechnologies. We make two situations explicit to illustrate the point: 1) Scientists from Israel have proposed to create human beings outside the womb, let them grow up to 40 days, study them and kill them⁹; 2) The biotech firm, Oxitec, created transgenic mosquitoes. 150,000 of these mosquitoes were released in the US to control pests like Zika¹⁰. Both examples have sparked political, ethical and scientific discussions,

⁷ SAVULESCU, Julian, “**Procreative Beneficence: Why Should We Select the Best Children,**” *Bioethics*, Vol. 15, No. 5–6 (2001), pp. 413–426.

⁸ Regulatory gaps are biojuridical instead of juridical ones, since some Courts and judicial bodies have issued jurisprudence regarding situations generated by biotechnologies. So that the gap is not legal (not only), but bio-legal, in the sense that biotechnologies affect the bios and, therefore, law is no longer disciplinary enough. Biolaw, on the other hand, is born, precisely, because of the demands thrown by biotechnological scenarios. However, biolaw is still an incipient field, known only by some circles of experts who theorize and produce doctrine, but not law. It is essential to take the step from doctrine to law, in situations that, as I noted in previous lines, have not been sufficiently standardized.

⁹ GARMENDIA, Alvaro Colombres. Científicos israelíes propone crear humanos fuera del útero, que crezcan hasta 40 días, estudiarlos y después matarlos. **Bles Mundo**. 05 August. 2021. Available in: <https://bles.com/mundo/cientificos-israelies-propone-crear-humanos-fuera-del-utero-que-crezcan-hasta-40-dias-estudiarlos-y-despues-matarlos.html>. Access in 07 October 2022.

¹⁰ AGUILAR, Mar. Oxitec, empresa financiada por Bill Gates, libera mosquitos modificados genéticamente: el objetivo es acabar con la hembra de mosquito que transmite el dengue, el zika y la fiebre amarilla.. **Muy Interesante**, 07 May 2021. Available in:

which are difficult to resolve, due to the lack of biojuridical frameworks to regulate them.

In this work we take another situation generated by biotechnologies: digital hyperconsumption. We show its neural harmfulness and propose the thesis of juridifying and resignifying principles of biolaw. Specifically, we articulate the link between unregulated use of biotechnologies or biotechnological hyperconsumption, and cognitive damage. Hence, we formulate the following thesis: biolaw has a responsibility related to cognitive health that consists on regulating, with binding and limiting force, as well as through the resignification and specification of bioethical principles, how human beings use biotechnologies.

In the same direction, Castaño-Bedoya has investigated and discovered the theory of attribution, that is, the theory of attribution of responsibility, empirical data pointing that subjective imputation is not only a deeply anchored and early assimilated means, but above all a means of social action used in everyday life in an extraordinarily differentiated way. In the joint exposition by Berbrauer-Haffke, up to five interpretations of the question can be read: is the actor responsible for the result of his action? ¹¹.

A biojuridical globalization that juridifies, resignifies and densifies principles of bioethics for human development, is an urgent (and nonexistent) face of globalization. Here we contribute, to some extent, to setting an essential precedent, which is summarized in drawing a biojuridical dimension to the global world, which can ensure that what configures our functions, capacities and possibilities (the brain), is not affected by negative expressions of globalization.

<https://www.muyinteresante.es/salud/articulo/oxitec-empresa-financiada-por-bill-gates-libera-mosquitos-modificados-geneticamente-771620380756#:~:text=La%20empresa%20de%20bi>. Access in 07 October 2022.

¹¹ BEDOYA, Castaño A. **Teoría dinámica del derecho**. Colombia: Librería Jurídica Comlibros, 2004. p. 287.

1. Propaedeutic Notions: Two Philosophical Views of Digital Hyperconsumption

Our starting point is philosophical reflection. We justify it by the disciplinary scope that philosophy has, entering into a knowledge about all things, which examines reality from its ultimate causes and first principles; a knowledge, therefore, overriding for the understanding of reality, that tarts up the gaze on the phenomena. Therefore, and although the focus of this research is bioethical and biojuridical, we consider that the philosophical approach is essential. That is why we write these propaedeutic notes.

In fact, it is worth remembering that the deepest meditations on the irruption of the technical, technoscientific and biotechnological have been elaborated by philosophy, and very especially by the so-called *philosophy of technology*. Although the thoughts on the technological go back to the foundations of Greek philosophy, the twentieth century had the greatest boom in this regard. Philosophers such as Ortega y Gasset, Martin Heidegger, Walter Benjamin, Gunther Anders, Gilbert Hottois, Jaques Ellul, Hans Jonas, Hannah Arendt, to name just the best known, bequeathed navigation charts to the world. In accordance with the above, all theorizing related to the effects of biotechnology in life cannot dispense with the philosophical anchor.

So, we chose two contemporary philosophers of universal scope, whose speculations, in addition to being current and pertinent, have been read in many geographies and are increasingly being studied in university faculties of human sciences.

1.1. Byung-Chul Han and the Neural Pandemic

Byung-Chul Han in his essay entitled *The Society of Fatigue* examines some of the effects of the “overabundance of positivity” or, what is the same, of the neural

consequences derived from the continuous exposure of human beings to certain forms of life and of culture; In short, he reviews the pandemic of the 21st century, which he considers to be neuronal in nature¹². This new society, which is tired and neuronally ill, presents explicit symptoms of its illness: depression, attention deficit hyperactivity disorder (ADHD), borderline personality disorder (BPD), occupational burnout syndrome (ODS), among other tenor analog disorders. His study is not a mere philosophical speculation, but corresponds to other diagnoses made by intellectuals¹³ of notable prestige and with numerous scientific works focused on the proof of the relationship or nexus between cognitive damage and certain contacts with cultural forms.

While Byung-Chul Han's approach is sharp, relevant, and current, it is not *ex nihilo*. From a judicious reading of Nietzsche, Franz Kafka, Walter Benjamin, Merleau Ponty, Paul Cézanne, Hanna Arendt, Gregorius Magnus, Giorgio Agamben, Martin Heidegger, Jean Baudrillard, Roberto Esposito, Peter Hanke Among others, Byung-Chul Han deepens his initial insight into the "overabundance of positivity" as one of the characteristic elements of the "performance society"¹⁴ and analyzes its consequences. The acuity of his analysis is twofold: on the one hand, it reaches a current and pertinent reading of the mentioned intellectuals and of many others who also warned about the dangers of unlimited techno-scientific progress; on the other hand, his deductions, based on literature and philosophy, correspond to scientific evidence, some of which will be cited later on.

The Society of Fatigue and *The Swarm* review how biotechnological hyperconsumption and some of its cognitive demands confine the mind to a digital swarm and digital communication that inevitably end up cracking cognitive health. A

¹² CHUL HAN, Byung. **La sociedad del cansancio**. Edición ampliada. Barcelona: Herder, 2018. p.13.

¹³ Several 20th century philosophers and writers paid special attention to the question of technology and its consequences for humans. Some examples are José Ortega y Gasset, Hans Jonas, Jürgen Habermas, Gilbert Hottois, Peter Sloterdijk, Jacques Ellul, Joan Patocka, Aldous Huxley, George Orwell, Stanislaw Lem, among others.

¹⁴ CHUL HAN, Byung. **La sociedad del cansancio**. pp. 45, 67

digital swarm of digital men who eventually become *Hikikomoris*¹⁵. Thus, all this biotechnological hyperconsumption causes more and new cognitive aftermaths. An example that is becoming more and more visible is the IFS (*Information Fatigue Syndrome*). This syndrome is a psychic illness produced by biotechnological information: Those affected complain of increasing paralysis of the analytical capacity, disturbance of attention, general restlessness or inability to assume responsibilities.¹⁶

Ultimately, digital hyperconsumption and its adjoining universe (hyperexposure, hyperdigitalization, hyperculture) commercialize the person: “In positive society, in which things, now converted into merchandise, have to be exposed to be, their cultural value disappears in favor of the exposure value”¹⁷). This situation leads, Han says, to the coercion of exposure that gives everything visibility.

In 2018, Herder publishing house published in Spanish an investigation by Byun-Chul Han on the culture of the global era. It is entitled *Hyperculturality*. He highlights some other harmful aspects of the network and its use. One of the central theses is the relational nature between individuals and the network. What kind of relationships are generated with the network? Assigning relationships, for example, liquid, light, ephemeral and false. The relationship of individuals with the network does not build the being, but de-substantiates it, defactualizes and rhizomatizes it.

In such a way that configuring identity and worldview based on the network is constructing a disjointed and detached self, which is only capable of imagining (projecting, representing, understanding) the fragmented, uprooted and empty world. Being the place defactified, deontologized and deontheologized. So, the network, which is a non-place, or, in other words, which is an uninhabitable space, cuts the possibility that its consumers visualize an arrival, because the network is presented as such (without even being it).

¹⁵ People who live on the margins of society. These people decide their isolation. They prefer to spend their days at home in front of television, social networks and video games, before sharing with people in personal ways. *Hikikomoris* develops mental disorders over time and compromises, definitely its cognitive health.

¹⁶ CHUL HAN, Byung. **La sociedad del cansancio.**, pp. 88, 89, 90

¹⁷ CHUL HAN, Byung. **La sociedad de la transparencia.** Barcelona: Herder, 2013, p. 26.

Thus, the being that consumes the network is affected in its cognition, as it becomes someone (something?) Disconnected and disengaged from the other, from others and even from itself. And as a result of this essential detachment from the self, the being is hardly able to find reality and to understand the true nature of phenomena. As a result, the children of the network give themselves their world, but that construction is, in reality, a mirage (a projection) of their atrophied self. Beings without temporality, if tradition, without longings, immersed in an *entirely here*: "Hyperculture is, then, a culture of being here"¹⁸. If Heidegger tries to retheologize being, the network does the opposite, that is, it leaves being without a world, because it takes from the world what is lasting, what is significant, what is communicating.

In *The Disappearance of the Rituals* Byung-Chul Han explains: "Time today lacks a firm framework. It is not a house, but an inconsistent flow. It disintegrates in the mere succession of a punctual present. It rushes without interruption. Nothing offers him a *grip*. The time that rushes without interruption is not *habitable*"¹⁹.

1.2. Gunther Anders and the Absence of the World

Gunther Anders, scholarly thinker, first husband of Hannah Arendt and her beloved friend, devotes the bulk of his work to a highly sophisticated meditation on technology and its relations with the human. Although only a few years ago he began to study himself in Latin America and to place himself on the map of well-versed and consulted intellectuals, Andersian experts find in *The Obsolescence of Man* (two volumes), with good reason, a valid and penetrating philosophy of technology. We consider that Anders' findings on the technological question (his deductions and thoughts) denote originality, sharpness and superlative culture:

¹⁸ CHUL HAN, Byung. **Hiperculturalidad: Cultura y globalización**. Barcelona: Herder, 2018. p.61

¹⁹ CHUL HAN, Byung. **La desaparición de los rituales**. Barcelona: Herder, 2021.p.13.

The three main theses: that we are not up to the perfection of our products; that we produce more than we can imagine and tolerate; and that we believe that what we can, we are also allowed -no: we owe it; no: we have to. These three fundamental theses are, unfortunately, more current and explosive than then before the dangers of our world, which have become more evident in the last quarter of the century ²⁰.

The *Obsolescence of Man (Vol. I)*, explains, from its beginning, what we have pointed out in this research based on the reading of Byung-Chul Han, and what it has also been written by philosophers of technology, social philosophers, prestigious sociologists and writers: that products (artifacts) have ceased to be means, to be ends and, who would say, to take over the human. Even, to paraphrase Anders, to *devastate* the human:

What is valid for these devices is valid *mutatis mutandis* for everyone. And it cannot be argued that they still represent means, since it is part of the essence of the medium to be something secondary, that is, to come after the free determination of its purpose (...) They are not means, but *prior resolutions*, decisions that have already been made. taken on us before we get going. And, strictly speaking, they are not prior resolutions but the prior resolution²¹.

Gunther Anders was referring to the devices of his time (which survive the present, that is to say, *our* time). But his reasoning is valid for the subject of this investigation. The analogy is simple: biotechnologies have taken over the human. The evidence is the digital hyperconsumption of the world population. One of the results of that relationship - biotechnologies and brain - is cognitive damage or, to paraphrase Anders, again, the devastation of man (of the brain, we would say).

However, the text that is most conducive to this postdoctoral²² research is *Man without a world. Writings on art and literature*. In summary, we take a point: cultural pluralism and its link with man (men) without a world.

²⁰ GUNTHER, Anders. **La obsolescencia del hombre**. (Vol II). Sobre la destrucción de la vida en la época de la tercera revolución industrial. España: PRE-TEXTOS, 2010. p. 13.

²¹ GUNTHER, Anders. **La obsolescencia del hombre**. (Vol II). Sobre la destrucción de la vida en la época de la tercera revolución industrial. España: PRE-TEXTOS, 2010. p.20.

²² A detailed review of the two volumes of *The Obsolescence of Man* would exceed the format of this investigation. Hence, it is part of a future work, announced in the first footnote of this writing.

Even though we do not summarize the central ideas of the referred book here, we do write down the following propaedeutic. Anders inaugurates a definition that he calls *Man without a world*. A whole philosophical concept loaded with meaning, which analyzes the causes, contexts, situations, reasons, facts and other realities that make man one *without a world*. The scheme of his philosophy about the *worldless ones* is divided it into four, namely: men who are forced to live within a world that is not theirs (which is not built for them); the men who have lost their job (a world) that was not theirs either and, nevertheless, had to pay something for it; those forced to procure a world (a present); those who even participating in so many worlds at the same time (cultural pluralism), do not have a specific world²³.

Well, this last analysis (that of cultural pluralism) is the one we take to reinforce the idea that digital hyperconsumption deteriorates cognitive health:

The pluralism in which we were born (for example, in 1902) and in which we still live today, unlike simple pluralism, is an internalized pluralism and, therefore, a polytheism, said theologically. What am I referring to with the distinction between simple and internalized pluralism? By simple and not dialectically pluralistic I understand that world that contains and, therefore, admits several (at least two) gods (religions, churches, styles; for example, the Catholic and Protestant Church), but in which these, despite if they are different from each other (perhaps even contradictory) they do not fight each other, *but exist alongside each other* (...) Each position is granted the right to exist and to claim to have a “right”, but none can have “more right” than another. Obviously, this pluralism is a position that, properly speaking, neither believers nor philosophers should defend. However, apparently, it is part of the essence of the *pluralist* not to suffer anymore for not living in a certain world, but also to notice how indifferent the truth has become for him (...) Let's leave this and return to the main point: who he lives in a world in which all religions and worldviews are equally justified, he certainly does not live in any univocal world, but rather in a situation in which the surprising plural worlds begin to be harmless. Thus, *tolerance implies polytheism*, more precisely: *polycosmism*. And compared to an unequivocal position, *all polycosmism is naturally acosmism*

Now, thus far I have only spoken of simple pluralism, which we have left behind more than a century ago (...) What do I mean by the expression *internalized pluralism*? To that situation (Alexandrian, if you will), in which one not only tolerates the gods of others, but, in a more or less complacent way, *co-recognizes* them, even *co-venerates* them; that is at least what he *can*, *is allowed* or even *wants* or, for business reasons, even *should*. This may seem absurd, but this absurdity should not be attributed to me, but

²³ GUNTHER, Anders. **Hombre sin mundo**. Escritos sobre arte y literatura. España: PRE-TEXTOS, 2007.

precisely to the cultural situation that is called tolerance and that consists precisely in that contradiction. That the usually tolerant no longer tries to solve this condition (no: that he sees no reason to solve it) is another matter. This *co-recognition*, however, is not carried out in theocracy, but above all as an this and that, as a mere simultaneity or *juxtaposition of contents, visions or feelings of the world* that, despite being strange to each other or even sometimes opposed, surprisingly they don't seem to get in the way.²⁴

At the end of the chapter that we dedicated to Byung-Chul Han, we explained that the being is exposed to biotechnologies and, specifically, to digital hyperconsumption, and that this hyper-exposure has devastated it (detached, desubstantialized, misplaced, dislodged, denatured) with respect to himself, his relationship with others and his place in the world. But, in addition, he has swarmed and tired it in the extreme, to the point of generating a neural pandemic.

Anders' conclusion, read in an analogical key to this thesis, complicates what has been exposed so far. The reading would be as follows: digital hyperconsumption, the result of biotechnological reality, places the being in a phantasmagorical reality. Social networks, video games, smartphones and virtual realities facilitate (invent) the bridges between the individual and the plural. The doors to frequent other worlds (belief systems, etc.) are a *click* away. However, the visit to these worlds is not premeditated (slow, wanted, longed for, solid, investigated, analyzed, reflected), but thoughtless, trivial and impulsive, and even caused by *marketing* and its neuroconsumption strategies.

Therefore, it is not only those worlds that are *visited*. Also, with the click, those worlds can disappear to the worldview of the being that once wanted to visit them. And by disappearing a world we mean suppressing affective relationships and cultural interests immediately. If a digital consumer gets bored with the others and the other, he simply removes it from his social networks with a *click*, like someone who discards the garbage.

The conclusion? Being self-exposed and self-consumed in the cultural pluralism offered by the digital world, has no foothold in the real world, because most of their time and, therefore, their life experiences, come from artifice (of the digital).

²⁴ CHUL HAN, Byung. **La desaparición de los rituales**. Barcelona: Herder, 2021. p.13-15.

His reality, then, is plural and delusional. His Facebook friends are from all geographies, the worlds of video games are of all imaginations, the applications on his phone are of all colors and, among that pluralism of existences, there are no forceful vital affirmations that allow or string the identity, neither cement a self, nor build *meaning*. The digital amplifies the *internalized cultural pluralism* described by Anders.

2. Use of Biotechnologies and Cognitive Harm: Scientific Evidence

It is a scientific fact, not a philosophical speculation or a literary fiction, that the exposure of the human brain to certain biotechnologies triggers adverse and harmful effects on cognitive health. Next, we reference and abbreviate two scientific investigations in this regard.

In 2010 researchers Victor C Strasburger, from the *Department of Pediatrics, University of New Mexico Scholl of Medicine*; Amy B. Jordan, of the *Anneberg Public Policy Center, University of Pennsylvania, Philadelphia*, and Ed Donnerstein, of the *Department of Communications, College of Social and Behavioral Scienses, University of Arizona, Tucson, Arizona*, published the review article entitled "Health Effects of Media on Children and Adolescents. " In the article they argued, on a scientific basis, that spending an average of 7 hours on television, the internet, video games and the mobile phone (cell phone) have consequences in children such as eating disorders, mood disorders, disorders of sexuality, learning disorders, substance use disorders, and eating disorders.

In July 2011 researchers Betsy Sparrow, from Columbia Univesity; Jenny Liu, from Wisconsin University; and Daniel M. Wegner of Harvard University published the article "Google Effects on Memory: Cognitive Consequences of Having Informations at Our Fingertips, in Science Magazine." The article, now associated by the scientific community as the article on the "Google Effect", reveals proven effects of the internet on the human brain. Researchers show, with tests

applied to university students, that the internet has begun to replace memory. Data banks begin to act as a collective memory available for consultation. In sum, the "Google Effect" proves that human beings find it increasingly difficult to remember, that is, to have a good memory. In other words, overexposure to this type of biotechnology undermines memory and, consequently, affects said cognitive function.

In 2013, Manfred Spitzer's book *Digi@l dementia. The danger of new technologies*²⁵ was translated into Spanish. The danger of new technologies. The book was a best seller in Germany. The author was aware, like Anders, that being a critic of the digital world is going against the current. Therefore, he announces, from the beginning of his work, the seriousness of his research: "Digital insanity ... What nonsense!, I already hear my critics say; however, they only have to turn to the global digital data network to convince themselves otherwise. If we enter into Google the expressions *demencia digital* a or *digital dementia*, we will obtain in tenths of a second about 6,500 records, and in English, 38,000"²⁶. And yes, it is an abundant text of references. It is not, then, an improvised disclosure, but a scientific investigation. That is why we use it as the main bibliographic source:

Since I have been dealing with people, the brain, learning processes and the media for decades, and since I contemplate these developments in a different way than most people (surely with my father's glasses and also with those of the neuro-researcher) I want to expose all the facts, data and arguments on the table with the greatest possible clarity. I refer mainly to scientific studies from good and well-known specialized scientific publications to which everyone has access. In short, it is possible to establish a necessary causal relationship between neuronal damage and exposure to certain technologies.²⁷

²⁵ We do not present the entire Spitzer book here. We only refer to a substantial idea that reinforces our research: the cognitive harm caused by digital hyperconsumption.

²⁶ SPITZER, Manfred. **Demencia digit@l**. El peligro de las nuevas tecnologías. Barcelona: Consell de Cent, 2013.p.16.

²⁷ SPITZER, Manfred. **Demencia digit@l**. El peligro de las nuevas tecnologías. Barcelona: Consell de Cent, 2013. p. 9.

The main argument (which we subscribe) is that digital and its consumption affect the brain: “Digital media leads us to use our brain less, thereby reducing its performance capacity over time. In young people, digital media prevent the formation of the brain”²⁸. This idea is repeated in different ways throughout the text, and is developed with examples and scientific evidence. For example, Spitzer sets its gaze, not only on the obvious damage that biotechnological hyperconsumption generates to the brain, but also on the increase of this hyperconsumption in vulnerable populations, that is, in children and adolescents:

Digital media (the computer, the smartphone, the game console and, not ultimately, the television) transform our lives. In the United States, adolescents spend more time using digital media (approximately seven and a half hours a day) than sleeping, according to a study carried out with more than 2,000 children and adolescents between the ages of eight and eighteen.²⁹

3. Legal Order and Other Regulations

The comprehensive understanding of the legal reality is a datum of experience, of course an open and comprehensive experience, in which the legal reality is integrated with elements of diverse kinds: Werner Goldschmidt distinguishes three levels in what he calls “legal world”: that of values or justice, that of norms and that of social conduct; authors like Miguel Reale, Legaz and Lacambra, and Recasens Siches do the same. (...). In other words, the legal is something even more complex and includes, in addition to the aforementioned realities, knowledge, imperatives or technical rules. Above all, as Casares rightly pointed out, everything legal speaks of an essential adjustment to purposes, those that make up the reality of law and demand to be understood for a true capture of legal reality.³⁰

The relationships between the legal order and the moral order have been a constant reflection of philosophy of law and legal theory for centuries. The positions about whether these two legal systems are the same, are antagonistic or different,

²⁸ SPITZER, Manfred. **Demencia digit@l**. El peligro de las nuevas tecnologías. Barcelona: Consell de Cent, 2013. p. 322.

²⁹ SPITZER, Manfred. **Demencia digit@l**. El peligro de las nuevas tecnologías. Barcelona: Consell de Cent, 2013. p. 8.

³⁰ MASSINI, Carlos. **Interpretación de la ley natural**. España: Eunsa, 2006. p. 135.

but, at the same time, related, have varied between the different conceptions and schools of law: Legal formalism, Legal Historicism, Legal Relativism, Scandinavian Legal Realism, North American Legal Realism, Legalism, Constitutionalism, Neoconstitutionalisms, Critical School of Law, Originalism, Living Constitution and Schools of Natural Law. All these conceptions and schools of law address the problem and yield dissimilar conclusions about the relationships between the legal systems in question.

Basically, the legal order (in this case, biojuridical) and the moral order (in this case, bioethical) are intrinsically related. Their relationship has the same reasons that the philosophy of law has explained to prove that law and morality have close relationships: 1) morality is a source of law, since respect for morality is something that matters to the common good, and the common good is one of the purposes of law; 2) “it is the function of law to create a climate, so to speak, conducive to the fulfillment of morality, not only in the sense of not creating obstacles to a virtuous life, but also in promoting the rule of ethical order , and this because the greater moral perfection of men contributes effectively to the social order and the realization of the common good”³¹; 3) law makes moral life possible, since making morality possible constitutes a goal of the legal order. Here it is convenient to make a call write for Alejandro Castaño-Bedoya to legal prudence: “The issue of legal prudence is essential to understand, in a broader way, the so-called rehabilitation of practical philosophy, that is, of that philosophy that seeks to direct human behavior, noting that this first semantic dimension so typical of analytical-hermeneutic philosophy is overcome by revitalizing the referential element of language within natural law, with which legal prudence is present -once again, as definitive when thinking about the universe of law, in matters as essential to the person as basic human goods in general and law and ethics of life in particular” ³².

³¹ LABORDE, Noguera Rodrigo. **Elementos de filosofía del derecho**. Bogotá: Fondo de publicaciones Universidad Sergio Arboleda, 2003.p.139.

³² BEDOYA, Castaño A. **A Introducción a la razón prudencial**. La virtud necesaria para conocer la verdad práctica en el derecho. En, Cianciardo, J., Etcheverry, Juan B., Martínez Cinca, C., Rivas, P., Serrano Saldaña, J., Zambrano, P. *Filosofía práctica y derecho. Estudios sobre teoría jurídica contemporánea a partir de las ideas de Carlos Ignacio Massini Correias*. México: Instituto de

In accordance with the above, we defend the thesis according to which biolaw and bioethics are different, but related, orders; more specifically, we promote the responsibility of biolaw in the cognitive health of communities and, therefore, in human development, through the redefinition and specification of bioethical principles.

In particular, we develop the idea that biolaw enables and regulates bioethical principles and, with that, can be a binding legal framework to regulate, beyond the deliberative frameworks of bioethical principles, the uses individuals make of new technologies or more precisely, of biotechnologies, now by placing limits on the generators of biotechnologies, now by prohibiting the consumer from abusing them. Therefore, we propose that two principles be resignified to preserve cognitive integrity: the principle of integrity and the principle of vulnerability, by Peter Kemp and Jakob Dahl Rendtorff.

4. Integrity and Vulnerability: Epistemological Resignification

Jacob Dahl Rendtorff and Peter Kemp identify four ethical principles³³ or common moral values for European bioethics and biolaw: autonomy, dignity, integrity and vulnerability. In this research, as we announced in the summary that

Investigaciones Jurídicas, UNAM, 2016.

³³ Erick Valdés has criticized the approach by Rendtorff and Kemp and developed, based on his criticism, a resignification of the principles in question. His criticism basically consists in pointing out that these principles can only be shared in a formal way, that is, communities can agree on accepting those principles, but not necessarily on the content of those principles. Hence, they cannot be considered biojuridical but bioethical principles. His resignification consists in granting these principles normative force and binding power to guarantee its obligatory nature and, therefore, its denomination of biojuridical. This thesis has been ratified by Tom L. Beauchamp, in 2019. Both explanations are found in the book *Biolaw and Policy in the Twenty-First Century. Building Answers for New Questions* (Valdés E. and Lecaros J.A., Springer, 2019).

However, this research goes beyond Valdés' criticism, since it not only points out the need to juridify bioethical principles, but to specify that juridification towards a specific target: the preservation of cognitive health as a fundamental basis for human development. Ultimately, this research proposes a specified resignification of the principles of integrity and vulnerability. Such a proposal has, then, an implicit moral claim, insofar as it is intended to protect and develop a particular conception of good fitting into cognitive health.

introduces it, we examine and resignify two of these principles: the principle of integrity and the principle of vulnerability. For this purpose, we prepare the following exhibition, in which we present the resignification and corresponding epistemological proposal.

The principles of European bioethics and biolaw, identified and defined by Rendtorff and Kemp, could acquire a greater strategic value if they functioned legally, that is, if they reached, at least partially, a legally binding value. Clearly, in their original constitution, the principles do not enjoy that status, because they simply function as standards of common morality. It is the Danish theorists who assume that the principles have a legal status, in my opinion, non-existent. Rather, the principles of European biolaw indicate ontological conditions or general values, but the epistemological configuration of each of the principles does not indicate an explicit normative and legal content. Hence, a well-executed, systematized and legalized principlist model can be important to generate new regulatory certainties about biomedical practices.

Therefore, we propose that, in order to limit, with a legal framework, the indiscriminate use of certain biotechnologies to preserve cognitive health, the Rendtorff and Kemp principles of integrity and vulnerability be re-defined and specified. This resignification consists, specifically, in two aspects: first, granting them normative force; second, to specify the scope and purpose of that normative³⁴ force, that is, its epistemological density.

Rendtorff and Kemp assume that their principles have already been legalized because although they are ethical principles, "in some way" they are already part of the law. However, this represents an arbitrary leap from ethics to law, which is inadmissible to construct a logical biolaw in its formal and material aspects. Consequently, and without affirming that this could be a definitive bio-legal model, we show, very synoptically, how the two aforementioned principles of European bioethics and biolaw could be redefined and legalized. Such resignification and

³⁴ VALDÉS, Erick. **Towards a New Conception of Biolaw**. En, Valdés, E. y Lecaros, J.A. Biolaw and Policy in the Twenty-First Century: Building Answers for New Questions, 2019.

juridification optimizes Rendtorff and Kemp's proposal. From the preceding diagnosis, the principles can be redefined as follows³⁵:

Respect for Integrity: which indicates the right that every human being has to 1. Remain unalterable in his physical, psychological, biological and genetic constitution, and protect it from any harm, damage and alteration. It is based mainly on the Declaration of Helsinki (1964), which indicates "the right of the experimental subject to safeguard his integrity, and the duty to respect said integrity."

Respect for Vulnerability: which orders the respect and protection of the inherently trustworthy condition of the human being. Indeed, the human being, in its biological and psychological dimensions, is vulnerable and, as such, is exposed to damage, risks and threats. Valdés has highlighted that the procedural extension of this principle is greater than that of the other three since, in material terms, it subordinates autonomy, dignity and integrity to the finite and mortal condition of human beings. For this reason, the principle of vulnerability assumes an ontological (but not necessarily normative) preeminence over the first three.

We now show how Rendtorff and Kemp should have proceeded if they had carried out a correct and explicit juridification of their principles. The process of juridification of the principles of biolaw that Valdés has proposed is theoretically simple. It is about transforming them into specific binding rules derived from a legal specification of the principles of biomedical ethics³⁶. We make the caveat that because of how the principles of European biolaw are epistemologically constructed (more as ontological conditions than as legal norms), still legalized, their scope would only apply to solve rather simple cases in the context of bioscientific practices.

³⁵ VALDÉS, Erick. **Towards a New Conception of Biolaw**. En, Valdés, E. y Lecaros, J.A. Biolaw and Policy in the Twenty-First Century: Building Answers for New Questions.

³⁶ VALDÉS, Erick. **Biolaw**: Origins, Doctrine and Juridical Applications on the Biosciences, Switzerland: Springer, 2021.

To address and encompass all or most of the complex cases, a more comprehensive and essentially legal biolaw model is required³⁷.

For now, and taking into account the above, we test the juridification proposal. To do this, we will contrast the two analyzed principles with the contemporary event of biotechnological hyperconsumption and we will determine if this should be, in some way, regulated by international legal systems. In the same act we will provide the principles in question with greater epistemological content, granting them greater precision and limiting their originally vague and general scope. Applying the principles, already endowed with content, as a binding regulatory framework for non-therapeutic genetic practices, the result could be the following:

The principle of respect for integrity would reject the effects of biotechnological hyperconsumption. Respect for the genetic integrity of the human being supposes the right that each individual has to live an authentic human life, that is, endowed with a psychological and cognitive structure that has not been altered, biased and harmful, by external agents. At the same time, and in deontological terms, psychological and cognitive integrity must be understood as part of the cultural and social duties that a certain identity implies³⁸.

Taking into account this argument, some procedural norms of beneficence that regulate the protection of integrity should be considered, namely: always doing what is good for the other; protect and defend the rights of others; prevent harm on others; and promote the good of others³⁹. In short, once the principle of integrity is legalized, it would not legally endorse a deregulation of biotechnological hyperconsumption.

In turn, the juridification of the principle of respect for vulnerability implies the consideration of certain rules of non-maleficence, such as "not causing unnecessary harm" or "not depriving others of the goods of life"⁴⁰, so that, before this

³⁷ VALDÉS, Erick. **Biolaw**: Origins, Doctrine and Juridical Applications on the Biosciences.

³⁸ VALDÉS, Erick. **Biolaw**: Origins, Doctrine and Juridical Applications on the Biosciences.

³⁹ VALDÉS, Erick. **Biolaw**: Origins, Doctrine and Juridical Applications on the Biosciences.

⁴⁰ VALDÉS, Erick. **Biolaw**: Origins, Doctrine and Juridical Applications on the Biosciences.

epistemological content of the principle, the same principle would reject the individual and social effects of technological hyperconsumption.

In this way, the process that we have briefly described points out that the substantial difference between bioethics and biolaw lies in their binding nature. However, depending on the procedural and epistemological differences between both disciplines, the difference is observed in that the specification of bioethical principles has different consequences than that applied to the principles of biolaw, that is, that the former tends to raise the standard of deliberation, while the second tends to provide the basis for regulations, that is, for juridification.

Conclusions

Biotechnological hyperconsumption generates cognitive harm in individuals. Some of the cognitive impairments supported by scientific evidence are related to mood disorders, eating disorders, sexuality disorders, learning disorders, and sexuality disorders.

There is no binding global framework that regulates consumer biotechnological abuses or the information that biotech generators must include in their products. Bioethical principles are not enough to institutionalize binding frameworks.

It is not enough to resignify bioethical principles biojuridically, that is, it is not enough to grant binding character to bioethical principles, but it is necessary to specify that normative status, endowing them with greater epistemological content.

Cognitive health is the fundamental foundation for human development. Accordingly, it is necessary to protect cognitive health from biotechnological hyperconsumption, through biojuridification and specification of bioethical principles.

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