



# Health Reform during the 21st Century: Dispute of Knowledge and Planned Ignorance in the Era of Digital Acceleration and Collapse of Bioethics\*

Reforma en salud en el siglo xxi: disputa del conocimiento e ignorancia planificada en la era de aceleración digital y desplome de la bioética

Reforma sanitária no século XXI: disputa de conhecimento e ignorância planejada na era da aceleração digital e colapso da bioética

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## Abstract

The greatest paradox of human society during the 21<sup>st</sup> century is the vertiginous acceleration of a runaway neo-extractivism and the collapse of principles and values that enable healthy good living. This is aggravated in current times, paradoxically, when humanity reaches the highest thresholds of knowledge and technology. The exponential and parallel growth of the private accumulation of wealth, together with the reproduction of a profound inequality, now take place even in unprecedented settings and dimensions of hyper-neoliberal accumulation, within a civilization guided by greed. Consequences on the planetary health field are devastating. In this era, human knowledge and accelerated digital thinking—misnamed

“artificial intelligence”—, rather than strongly promoting the emancipatory uses of technologies, these are generating increasingly dangerous production systems, distorting the potential of science and distancing universities from a fight for so-called “epistemic justice”, in the complex task of overcoming biased scientific knowledge that feeds strategic ignorance and blocks academic reform.

-----*Keywords:* university health training, hyper-neoliberalism, strategic ignorance, epistemic justice, neo-extractivism, digital thinking (“artificial intelligence”), health reform

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## Resumen

La mayor paradoja de la sociedad humana en el sigloxxi es la vertiginosa aceleración de un neoextractivismo desbocado, y el colapso de los principios y valores que hacen posible un bien vivir saludable. Esto se agrava en tiempos actuales, paradójicamente, cuando la humanidad alcanza los más altos umbrales del conocimiento y la tecnología. El crecimiento exponencial y paralelo de la acumulación privada de riqueza, junto con la reproducción de una profunda inequidad, se realizan ahora incluso en espacios y dimensiones inéditas de la acumulación hiperneoliberal, en el seno de una civilización guiada por la codicia. Las consecuencias en el campo de la salud planetaria son devastadoras. En esta era, el conocimiento

humano y el acelerado pensamiento digital —mal llamado “inteligencia artificial”—, en lugar de impulsar con fuerza los usos emancipadores de las tecnologías, están generando sistemas productivos cada vez más peligrosos, distorsionando las potencialidades de la ciencia y alejando a las universidades de una lucha por la llamada “justicia epistémica”, en la compleja tarea de superar un conocimiento científico sesgado que alimenta la ignorancia estratégica y bloquea la reforma académica.

-----*Palabras clave:* formación universitaria en salud, hiperneoliberalismo, ignorancia estratégica, justicia epistémica, neoextractivismo, pensamiento digital (“inteligencia artificial”), reforma en salud

## Abstract

The greatest paradox of human society in the 21st century is the dizzying acceleration of unbridled neo-extractivism, and the collapse of the principles and values that make healthy living possible. This is aggravated in current times, paradoxically, when humanity reaches the highest thresholds of knowledge and technology. The exponential and parallel growth of the private accumulation of wealth, along with the reproduction of profound inequality, is now taking place even in unprecedented spaces and dimensions of hyper-neoliberal accumulation, within a civilization guided by greed. The consequences in the field of planetary health are devastating. In this era, human knowledge and accelerated digital thinking—misnamed

“artificial intelligence”—instead of strongly promoting the emancipatory uses of technologies, are generating increasingly dangerous productive systems, distorting the potential of science and distancing universities from a fight for so-called “epistemic justice”, in the complex task of overcoming biased scientific knowledge that feeds strategic ignorance and blocks academic reform.

-----*Keywords:* university education in health, hyperneoliberalism, strategic ignorance, epistemic justice, neoextractivism, digital thinking (“artificial intelligence”), health reform

The greatest paradox of human society during the 21<sup>st</sup> century is the vertiginous acceleration of runaway neo-liberalism, and the global collapse of principles and values that enable healthy good living. This occurs precisely when we potentially have the greatest development of knowledge and technology in human history. There is currently no productive, political, cultural or even scientific-academic stronghold that is not imbued or at least seriously threatened by the direct or veiled penetration of a type of knowledge favorable to this devastating and regressive trend.

Observing the paradox from the principles of responsible science and from the ethics of free and critical thinking teaching, this essay synthesizes the demonstrative facts, which the author and other researchers have exposed that allow sustaining how academic centers currently confront the new era of knowledge constriction, tangible or hidden, that feeds a “strategic ignorance”, generated even by university professors and researchers with Cartesian training [1].

#1 The global scenario: the multiple crisis of life

In prior publications, I have described the multiple catastrophe faced by life on the planet [2-4]. It is in the

historical context of a world governed by productivist greed, underpinned by an unhealthy civilization that Echeverría defined as incompatible with life because nature lost its sacred sense to be converted into a great continent of merchandise, where the ethical bases of politics were corrupted and where we sank into rabid individualistic consumerism [5]. Dangerous trends for some time, but which take on unusual weight in the current era.

Said debacle has the material, historical basis or matrix of an empowered neo-extractivism, intimately linked to the magnification and acceleration of the greed of giant companies that have taken advantage of the fourth industrial revolution to purify the procedures of such neo-extractivism. As an emblematic example, we can cite that resulting from the study by Wanderlei Pignati and researchers from the University of Mato Grosso on the socio-sanitary-environmental disaster that ultra-technological agribusiness has caused in said region. A case of unequal and combined destruction, given by the application of agriculture 4.0, which operates with the expansion of slave labor [6]. The 21<sup>st</sup> century and the slave-owning Middle Ages coexisting in a painful reality. A model not only applied in Mato Grosso, but which has also expan-

ded throughout the vast territory of said continent nation, as shown by the atlas “Geography of the use of pesticides in Brazil and connection with the European Union” by Larissa Lombardi [7], a trend that has been equally detected in several of our countries.

The example cited applies for all our countries and planet a profound challenge with respect to the formation of our professionals and specialists. Looking from collective health and critical epidemiology, that process of massive and ruthless pollution, drainage of aquifers, large-scale deforestation, etc., which destroys health and seriously injures the lives of workers, communities, and ecosystems, we have characterized as a pandemic-syndemic crisis: the first appellative, *i.e.*, pandemic, due to the widespread massive nature of the affectation, and the second, *i.e.*, “syndemic”, due to the combination of various destructive processes of concomitant and interdependent character that mutually enhance each other in their destructiveness of the good living of the actors and spaces of life. In this sense, the pandemic-syndemic implies:

Concentration of private wealth and massive social exclusion: the growing and exponential reproduction of social inequality in the world’s neoliberal cities and on the new agro-toxic and unfair rurality, which have expanded.

Growing inequality of power and the exponential reproduction of social inequality in neoliberal cities and on the new agro-toxic rurality.

Widespread and global dismantling of ways of living suitable for health, with the emergence of the transmissible and non-communicable pandemic cycles.

Global unleash and acceleration of catastrophic climate change and the greater vulnerability of the poorest and least organized communities.

The populist authoritarian construction of geopolitics and governance, public management with replacement of the people.

The objective and ethical crisis of hegemonic scientific knowledge; characterized by strategic ignorance and planned disinformation (profound infodemia).

The project of the architects of hyper-neoliberalism is so violent and abominable that Nancy Fraser defines it as “cannibal capitalism” because it devours democracy and the planet, endangering existence itself [8]. An extreme situation that forces us to rethink science in its various aspects: theoretical, ethical-philosophical, methodological and practical, and leads us to ask: What to do when blatant ignorance about this matter reigns in our academic settings specialized in health? What to do when common sense leads us to the monstrosity of saying that this has nothing to do with being a good doctor, nurse, dentist, or specialist? What to do when a fracture of knowledge about health reigns and reproduces itself, distorting the entire system?

## Acceleration of the material base (hyper-neoliberal) and thought control

A setting for reflection on health training cannot be accomplished from within a highly specialized bubble of knowledge, but profoundly ignorant of the reality in which health problems are born and reproduced. Debates cannot be serious and effective if we do not look at the reality of health with equal care and precision as when we are preparing an operation protocol or a therapeutic scheme. That reality from which health challenges arise – like it or not – is an aggressive market society.

Accumulation of private capital at increasing scale, as widely known, is the reason for being and logic that defines the social system and the civilization of capital that involves us. An era of great feats, technological achievements, fascinating and contradictory works of intellect, but dominated by private interests and liberal thought, seeking always to impose itself over collective thought, also formidable, of “those from below”.

It has been a struggle projected for centuries as the confrontation between those among those who most concentrate private wealth from their companies and domes of power, and those who labor with their intelligence and skills to perform as professionals or to survive in the limited and always deficient margins of the social pact we have historically managed to extract from the owners of the system.

Since the dawn of the market economy, social principles and strategies have been assumed by thinkers from the cenacles of power as a hindrance to the impulse and free exercise of that liberal economy. Thereby, at different times leaders have sought strategic responses to the social struggle that history has explained. But it was from the beginning of the 20<sup>th</sup> century that this strategy was nourished by neoliberal ideas.

Neoliberalism, in its beginning, was not a monolithic block because, beyond the common desire to end collectivist tendencies, there were substantial differences among the more legal sociological school of “ordoliberalism” by Walter Eucken and Franz Böhm, the theses of “sociological” neoliberalism by Alexander Rüstow and Wilhelm Röpke, or those of ultraliberalism by Milton Friedman, Ludwig von Mises, Friedrich Hayek, Gary Becker, and James Buchanan [9].

The term “neoliberalism” was coined originally in 1938 by German economist Alexander Rüstow and a group of thinkers with classical liberal ideas, which sought to adapt them to the pressures of certain sectors through a model that permitted a higher rate of profit in the new economic and social realities faced by the aegis of capital [9].


It is evident that with neoliberalism a more daring historical period of dismantling the social pact and the institutional and legal bases of social and health rights began, claims the social struggle had constructed since prior centuries with tenacity and sacrifice. On the path to its consolidation as the paradigm of the maximum accumulation of capital, its theorists and ideologists were positioning ideas about reducing the State's role in the economy; promotion of competition and free market; privatization of State enterprises; and decrease of government regulations on the economy. These were the foundations of a regression reactivated in the 1970s and 1980s, through ideas promoted by economists, like Friedrich Hayek and Milton Friedman. Formulas of liberal extremism that took shape in policies of financial deregulation, privatization of services, commercial aperture, and structural reforms in several countries, opening a

perverse and regressive horizon for human social and cultural rights of demolishing impact in fields, like education and health. Regrettably, as explained herein, besides all the previous losses, a deformation and loss of values has grown in science.

### Historical evolution of extractivism and of thought control

In the history of the private accumulation of capital, four main stages have existed up to the present, distinguished according to the degree of development of the *productive force*; types of *subsumption* processes,<sup>†</sup> linked to that economic-political base, and the *spaces* and *scales* so diverse of carrying out the accumulation of capital. Four major periods exist of the historical acceleration of extractivism and its destructive potential (Table 1).

**Table 1.** Periods of extractivism, material base and subsumption to accelerate accumulation

Historical movement				
	Historical evolution of extractive rate: human exploitation and of nature			
Period	~ 1784	~ 1870	~ 1969	~ 21st century
	1 <sup>st</sup> Industrial revolution	2 <sup>nd</sup> Industrial revolution	3 <sup>rd</sup> Industrial revolution	4 <sup>th</sup> Industrial revolution
Material base of the productive force	Mechanization of work	Mass production	Automation	Production virtuality on cyber- and nano-scale, with limited or no regulation, supported by digital thinking (AI)
	Worker with machines (vapor, hydraulic)	Assembly line, electric power	Computer industry, robotics	Globalized extractive systems in real time, convergence of cyber-physical systems, technologies 4.0
Cumulative processes of <i>subsumption</i> of production and life	Formal subsumption, actual subsumption	Consolidation of actual subsumption, through production chain	Actual subsumption with electronic automation Subsumption of consumption	Cyber-physical subsumption of thought, algorithmic subsumption, cyber-determination of life (algorithmic governance through AI)
Space, organization	Classical factory	Scale factory with Fordist organization	Chain company, automated production processes, basically in real time	Cybernetic space and nano-spaces Lucrative convergence of new technologies, very limited or no regulation (informatics-communication acceleration: digital platforms ( <i>big data</i> ) and post-work. Cyberspace monopoly and commercialization of private life Internet of things ("I o T") Artificial biology and genetic engineering (AI supported)

AI: Artificial intelligence

Source: Elaborated from [4,10]

<sup>†</sup> *Subsumption*, the inherent determining connection of processes belonging to different domains of complexity of social reproduction. Conformity or subordination of the least complex movement with respect to a certain conditioning base or prevailing condition, under a mode of practice, prevailing course, or arrangement of a system, regime, regulation, dominant sequence, or prescription. These aforementioned forms of subsumption do not impede the ability to generate and create movements/spaces of relative autonomy [4, author's translation].

During the 21<sup>st</sup> century, the social reproduction of the accumulation of capital has reached its maximum degree of acceleration and aggressive private concentration. Extraction 4.0 is installed through processes of incomparable speed, of instantaneous globalization, highly specialized and continuous, which survive simultaneously from the grand global scale to nano-spaces, which achieve a drastic reduction of costs (*e.g.*, reduction of human labor through the so-called “artificial intelligence” – AI), and the consequent increase in the global and differential income of giant companies.

This is not the venue to deal in depth with the devastating consequences of all kinds caused by extractivism 4.0, an aggressive economic project that is reproduced in an unhealthy civilization that supports it from forms of culture, politics and even knowledge that are functional to it.

For the purpose of this essay, it is above all important to explain why we must state now that capitalism of the 21<sup>st</sup> century has not only become incompatible with good living and with life itself, as defined by Echeverría [5], but it has bred a giant thought-control process already foreseen by Thomas Hobbes even at the dawn of modernity. [11,12].

In effect, in his visionary theory of *Leviathan*,<sup>‡</sup> Hobbes reveals the full concentration of power achieved by the by the supposed consent of subordinates when they delegate power and freedom to an *unquestionable sovereign* to institute his order, making use of law and force. That sovereign today has been transformed and diversified because he is not only the sovereign who wins elections – with or without fraudulent processes, the classic sovereign of media control – public or private, but also the apparently artificial sovereign, who manipulates through the networks and algorithms of cyberspace. As we showed in a conference of the 9th Brazilian Congress on Epidemiology, thousands of users who access the virtual world also submit to forms of subsumption and thought control that are part of the social determination of life. Thus, in the virtual world, a gigantic extractivism occurs, with accumulation of capital, exclusion, and social inequality, exposure to multiple destructive and unhealthy processes of which subsumption and thought control are part [13].

Then, it is a worrying fact that over four centuries after the brilliant theory conceived by Hobbes on the transfer of power and freedom expressed in the classic vision

of *Leviathan*, the lives we live connected to cyberspace has allowed the *think tanks* of 21<sup>st</sup> century capitalism to renew and project their extractive tentacles to that new dimension of social space, and establish a mega-operation to decimate the profound sovereignty of the critical and deliberative pluralism of a cohesive people.

It could be stated, metaphorically, that “*Leviathan*” 4.0 emerges from a combination of classical methods and those permitted by technology 4.0. Classic stratagems persist, such as the weakening or division of union movements and popular movements, isolation and atomization of protest actions, submission of social organizations to the chain of transmission of centralized power, and formation of attached clientelist networks [14]. But now the process has been diversified toward other forms of subsumption, supplanting and control of popular power: 1) the transfer, through control of electoral processes, of our right to control the State’s operations, and the corresponding accountability; 2) cybernetic subsumption basically through giant networks and companies that access and manipulate our daily lives and common sense (*i.e.*, Meta, with Instagram and WhatsApp; Twitter (X), Tik Tok, etc.); and 3) transfer of scientific thought control to the owners of research centers, academic organizations, universities, journals, publishing houses, *etc.*, controlled by business power or the bureaucratic public.

It is around this last form of hegemony that we deploy in the following some vital topics.

## **Fundamental axes of scientific thought control in *Leviathan 4.0*: the Cartesian paradigm, strategic ignorance, and the misnamed “artificial intelligence”**

It is fundamental, not only for the general struggle for rights, but also for those but also for those of us who are urgently positioning the defense of independent, critical and emancipatory knowledge to have clarity about the serious distortions and threats that currently hang over thought and science. A problematic addressed currently in forums on epistemic justice or *justice of knowledge*<sup>§</sup> because it compromises our right to think about reality.

<sup>‡</sup> Thomas Hobbes’s “*Leviathan*” theory points out that the natural state of humanity is characterized by what he called the “war of all against all.” In this state, individuals are in a situation of constant conflict and competition for resources, which leads to insecurity and lack of peace. To escape from this chaotic circumstance, Hobbes argues that people should give up part of their individual freedom and submit to absolute sovereign power; hence the mythical figure of a mythical man created as a sum of small individualities.

<sup>§</sup> The Collective on Justice of Knowledge, formed recently from a colloquium about Global Health and the Right to Health to which we were invited, in October 2022 in the Institute of Human Rights at the University of Connecticut, on the occasion of its 20<sup>th</sup> anniversary [15].

In the case of university or academic thinking in general, it is vital to understand why it is vital to understand why we now maintain that, beyond the great advances of technology – better said, of the scientific *hardware*, there is an urgency to face four problems that are found in the field of *epistemic justice*:

That the redoubled hegemony of the power line of thought, which lies in the systematic predominance of the Cartesian paradigm in research, is the basis that reproduces, in a thousand ways, strategic ignorance about essential dimensions and processes of reality.

That it is urgent to undertake a process of debate and profound reform of undergraduate and graduate formation to refine it with regard to the philosophy, methodology, and ethics from which the impact of research is conceived. A fundamental dimension of this is the issue of intercultural science.

As part of the foregoing, it is necessary to strengthen a sovereign and informed assimilation of the benefits and limits of digital thinking, incorrectly called “AI”.

That it is equally imperative to profoundly redefine bioethics applied to the evaluation of scientific programs and projects.

In this brief draft, it will barely be possible to outline these challenges, but it is urgent to draw attention to these issues, quite frequently ignored in congresses, seminars, and colloquiums on health reform.

### **The Cartesian paradigm and the delusions of a science that describes itself as “hard”**

The criticism of Cartesian thought is not new at all, as explained in previous publications [4,10,16], and can be approached from different angles. This essay gives prominence to the topic of the relationship between Cartesian scientific thought and power in two aspects: in the first place, the role of the Cartesian method as form of reductionist knowledge, which contributes to organizing the reality in a certain way convenient to the power of a State; and, secondly, the Cartesian thought as a bubble that constructs strategic ignorance.

Much would have to be said regarding this double role of the paradigm that has hegemonized the life and health sciences, but in these brief pages we will only highlight some points that we have addressed more widely in other writings [4,16-18].

We encounter two problems when we wish to look, from critical epidemiology, at health as a complex process of relationships in motion and not as a static set of risk factors, decontextualized, that come together externally. Positivist ontology froze, decontextualized,

and fragmented reality, and in doing so, created for us the fiction of essentially individual and psychobiological health. The task of critical Latin American thought has been to give back to health its movement, that is, its history, and the connection and context, to comprehensively rethink the Cartesian basis of biomedical actions, such as those of public health.

The critical realism by Karl Marx, expressed in his emblematic texts and widely disseminated, and a plethora of thinkers of counterhegemony, even of varied ideological signs and latitudes - which I have commented at length in several of my books [4,16,18]—, have offered us the tools to again see the world of health as a complex process of social relations of power and of metabolic relations with nature. Freed from the Cartesian yoke, diverse Latin American colleagues have offered new tools and instruments to rethink and innovate in the collective health field.

Paradigm and alternative models have flourished in close historical correspondence with the struggle of social movements or at least moved by the cycles of social crisis. It was Michel Foucault, among others, who knew how to explain well, in *Words and Things* [19], the relationship between power and knowledge in the midst of the history of the subject in modernity. It is no coincidence that his seminal works on how power seeks, through science, to organize reality in a certain way, so that it is functional to the interests that said power represents, have been precisely carried out around health themes: *The birth of the Clinic* [20] and *The History of Madness – three volumes –* [21].

Those of us who strive to transform the formation of professionals and health researchers must be very clear that the theoretical foundations, methodological formulae, and curricular design instruments, like the syllabus, in undergraduate and graduate programs respond, in a vast majority of cases, explicitly and implicitly, to the conceptual bases and reductionist methods of the Cartesian paradigm, both in its declaredly positivist versions and even in designs that represent a certain alternative and updated vision.

In a recent article in which I discuss the role of the principle of social determination in the transformation of rights and bioethics, I exposed a synthesis about why the Cartesian reductionism\*\* is the backbone of the science of power. Herein, I reproduce it:

[Cartesian research] describes the Surface of problems, without revealing their root. It reports on partial evidence without articulating it to its social matrix, thus, placing a veil on the profound reality that immobilizes

\*\* Reductionism: as explained in *Critical epidemiology and the people's health* [4], Richard Levins and Richard Lewontin have summarized it as the way of thinking (methodology) that fragments reality into parts; reifies these parts as static, decontextualized elements; then, associates those parts through mere external formal conjunction, all to describe and demonstrate probabilistic results, but without explaining reality as complex concatenated movement [22]

researchers in the face of the theses of a real transformation and condemns them to a functionalist pragmatism. In short, in all fields and under different disciplinary guises, Cartesian science works with factors isolated from the problematic, without showing its relationship with the social reproduction of capital, and the structural processes that generate them. This is so, because this way of thinking flattens and converts a reality that is dynamic and complex into static fragments of a disjointed world. [...] Many studies about health have been penetrated by this analytical empiricism that cuts and domesticates scientific production [23, p. 3].

Beyond the degree of analytical sophistication shown, be it mathematics, focused on the qualitative management of narratives or instrumental, the problem is that these refinements do not correct the significant ontological, epistemological and praxis errors that reducing the “health” object entails, either to the reliable measurement and recording of “causal and risk factors”, or to the meticulous systematization of narratives derived from interviews, in both cases studied in the empirical “tip of the iceberg”.

For the quantitative analysis, Cartesian reasoning is subject to the principle of correspondence, the logical structure of positivist research, the base of the entire edifice of causal empiricism. By adhering to the precepts of reductionism, it creates the fiction that the essence of health lies in the “risk factors”, and that these exist to the margin of a context that determines them. Upon fragmenting and decontextualizing, it subtracts from that evidence itself its historical character and, thus, ends up dismantling the movement and the relational essence of the health process.

For the qualitative approaches, Cartesianism is expressed, as explained by Néstor García Canclini, by assuming equally the narratives and the immediate experiential spaces of the interviewees as entities that signify and explain themselves, and not thinking that said evidences must be analyzed in close relation with the social relations of a complex context [24].

In that sense, the former public health, by using Cartesian epidemiology, also ends up impoverishing statistical and narrative management techniques, by condemning them to work as if statistical data and qualitative expressions explained themselves and that their linear connections could be assumed as causes of a given disease or problem. Thus, Cartesian science condemns its cultists to only describe and calculate probabilities, systematize interviews, assuming that those linear relations in the “tip of the iceberg” are equivalent to reality. From this paradigm, linear links between variables are assumed as causes, when they are merely constant coincidences without a generative relationship.

As explained in other works, Cartesian thought is incompetent to explain health in its complexity, move-

ment, and multidimensional relations, but does manage to describe sophisticated systems of empirical coincidence and predict probabilities of outcomes that serve to design corrective actions, actions in the “tip of the iceberg” that, although incomplete, are sufficient to establish corrective operations, modify incidence rates and prevalence of problems, and justify the application of preventive and therapeutic schemes that, although they do not profoundly transform health, allow for a successful setup, and above all justify the millionaire business of the pharmaceutical industry [4,16,18].

### **Strategic ignorance and scientific illiteracy: consequences of the interpretative substitution of reality**

Up to here, we have analyzed positivist linear thinking as an instrument of functional knowledge to the power of the State that, in its public and private aspects, needs to apply a science that accommodates to the hegemonic reality principle. That is, a type of science that permits mobilizing public and private health systems to control “risk factors” and diminish epidemiological rates, but without transforming in-depth processes that determine full well-being and integral health.

As demonstrated in the last pandemic cycle, this has occurred not only during non-epidemic periods, but even during catastrophic periods, but on the basis of multi-million dollar and shady operations focused primarily on massive purchases of medications and vaccines [25]. These privatized code inputs were generated with public funds. These measures mitigate the problem, although leaving the pandemic-syndemic social and environmental base practically untouched [3]. They are executed breaking the ethical canons of responsible science [26]. And in parallel, an image of the success of these strategies at the height of social fear is disseminated, although later denied by independent research, as exemplified by the study published in the *European Journal of Epidemiology*, which demonstrates the non-existent correlation between the SARS-CoV2 epidemiological indices and vaccination levels in 68 countries and 2,947 municipalities in the United States [27].

It is not an exaggeration to speak of a true “scientific illiteracy”, an expression coined by Sandra Harding, who questioned the foundations of hegemonic science through profound analysis of the validity and convenience of hegemonic [JB “Cartesian”] standards of objectivity, rationality, and good research methods, constant in works that have been imposed as “hard” expression of good knowledge [28].

With this hurtful logic, we have an example of academic and media manipulation that leads media powers, consciously or deliberately, to hide, in the first place, the reality of the problem, that is, the strategy of focusing a complex problem on manageable and profitable risk factors; and secondly, the fact of exploiting the social com-

motion of disaster to increase business profitability. This strategy of accumulation of capital is similar to what happened, for example, in the catastrophe of hurricane Katrina in southern United States, whose study served to consolidate the thesis by Naomi Klein about the *shock doctrine*, an opportunistic use of social vulnerability to increase economic and political gains [29].

Construction, in recent decades, of the concept of *strategic ignorance*, as explained ahead, is product of the analysis of a voluminous file of so many varied cases of cutting and manipulation of scientific evidence, produced by scientists and research centers linked to large business interests.

The matrix case was that of the scientific and legal struggle by the tobacco industry that sought support from *a-la-carte* studies hired to reject independent studies that demonstrated the deep connection of production activities and consumers with pulmonary neoplasms, to discredit or sow doubts about the institutes or researchers clearly pointing out this epidemiological relationship. Researcher David Michaels, in the work *Doubt is Their Product: How Industry's Assault on Science Threatens Your Health*, exposes, in full detail, the designs, data manipulations, and legal stratagems in three stages: first, disprove with intentionally biased parallel studies; then, sow doubt about entities and scientists; and third, once the battle is lost, delay, dilate, and confuse the legal lawsuit processes [30]. The case of tobacco was followed by those of asbestos, benzene, or the most recent case of bisphenol A in widely used plastics, as a diabetogenic agent and estrogen disruptor.

Over time, presumptuous reports of “hard science” projects and articles have accumulated and published in journals of recognized *pedigree*, which have then been evaluated by independent science as scandalous distortions or omissions that turned them into episodes of fraudulent forging of the truth.

To confront this dangerous deviation from science, two prestigious professors from Stanford University, Robert Proctor and Londa Schiebinger, conceived the need to start a new study subject on the use of scientific knowledge to modify the horizon of scientific visibility, *i.e.*, to study how “science against science” can be used, working through planned ignorance. They called this new discipline *agnotology* and called on a group of renowned scientists to publish a first file. They managed to put together a pioneering work on a subject of enormous transcendence for the entire world [1].

Furthermore, as argued in an essay published in defense of the Oswaldo Cruz Foundation (Fiocruz) and the Brazilian Association on Collective Health (Abrasco)—emblematic entities of responsible science—, when the agro-industrial power in neighboring Brazil raged against these and sought to sow doubts on the wonderful study they sponsored about the devastating conse-

quences of destructive agriculture, the role of using a supposed science against science became evident and a perverse alliance was uncovered: the power and profit logic of big industry, the weakness of our legal systems, and the servility of a purchased science [31].

The examples I have cited herein of pressure of power on scientific work in moments of explicit conflict of interest serve to exemplify uses of strategic ignorance. But it would be an analysis error to think that the problem exists only when there is a manifest conflict and tension of interests. The problem exists daily and is constantly reproduced in the “normality” of university work, where strategic ignorance and scientific illiteracy operate in the teaching designs, thought, and exercises. This confirmation has led, in the last decade, to publications of caliber that denounce with thoughtful analysis the type of research emerging from the biomedical establishment as an unfocused bubble of waste [32]. A hegemonic model reproduced from hegemonic countries to the south, through a *branchism* that occurs due to teaching programs that are replicas of hegemonic models [33].

To the foregoing, we should add a wave of *paperism* to which we have been forced by university accreditation systems that, in the name of “excellence”, uncritically seek to copy the standards defined from the headquarters of scientific Cartesianism. Some authorship in the famous *papers* published in high-impact journals—many of which are sounding boards for the interests of the companies that finance them— give more points than books and profound, relevant, and impactful projects generated by non-hegemonic scientific centers.

## The double face of “artificial intelligence”: Submission? Digitally supported thinking?

The current world lives the fascination of the so-called “artificial intelligence”, generous, although mistaken, appellation given by its original proponents over 50 years ago.

As explained at length in a valuable critical essay by Kate Crawford and originally published by Yale University Press, the history of the development of AI is plagued by conceptual errors, myths, and questionable applications that have sustained an erroneous perspective of its true essence and usefulness, which is rather connected to the acceleration of lucrative and military uses [34].

To guard against the penetration of this interested mythology in our debates, it is worth making some fundamental clarifications that arise from a consolidated epistemology and an independent neuroscience.

Financial, cultural, and technological interests have contributed to consolidating, through Cartesian thought,



two principal myths on intelligence: first, that “non-human systems are analogous to the human mind”, and second, that “intelligence is something that exists independently, as something natural and separated from social, cultural, historical, and political forces” [35, pp. 23-24].

The notion that the mind is like a computer and vice versa operates in the current episteme, “a belief that has infected decades of thought in computer and cognitive sciences” [33, pp. 136-137].

Fortunately, specialists who have taken it upon themselves, from their deep knowledge, to reveal these myths have led us to understand that *artificial intelligence is neither artificial nor intelligent*, a lapidary conclusion that opens a horizon of emancipatory thought. Some illuminating reasonings should be highlighted.

Artificial intelligence systems, as established by Crawford, “are not autonomous, rational, or capable of discerning something without extensive and computationally intensive training”. Additionally, the author continues: “it depends completely on a much larger set of political and social structures [...] once we connect AI with these structures and more widespread social systems, we can overcome the notion that it is a purely technical domain” [34, p. 29].

If we add to what has been said the powerful social-biological arguments that independent neuroscience offers us, the matter becomes even clearer. Renowned neuroscientist Miguel Nicolelis, professor at the University of São Paulo, creator of the neuroscience laboratory at Duke University and author of a vast set of works on this topic, offers compelling arguments to take down from the pedestal that supposed “intelligence” that power seeks to equal to the human brain [36]. In a recent interview [37], synthesizing the consistent argument of his writings, he asserted that “non-human systems can only be trained to manage and solve computable processes, which can be reduced to fixed rules, capable of being automated and ordered by algorithms”. But not the great attributes of the human mind, such as intuition, intelligence, empathy, beauty, sadness, love, hate.” Next, the Brazilian scientist said that: “a computer trained with the profiles of all the works by Van Gogh will never be able to produce a Picasso”. He also stated: “Verdi had a way of composing opera, his own musical architecture, but if he had been asked to create something other than opera he could perfectly do so”. To finish by stating that, on the contrary,

[...] non-human systems go through a fixed learned binary logic and that is why it is impossible for them to reproduce what an organic intelligence system can do, whose functions are not connected to fixed elements, but rather they move and interact in organic neural networks of high variability and are dynamically linked to emotional, ethical elements, feelings, memories, that is, high neuropsychic connections

that do not occur in a single place. Even quantum supercomputers use binary final interfaces that filter the process.

Finally, he closed the substantial statement by adding that, in mass scenarios, behaviors are generated that would not occur in people, what is called a “brain network” synchronization in the face of strong stimuli [37; translation by the author].

We must be clear, then, that machines cannot emulate cognitive processes and solve problems the way humans would do. Understanding also that submitting our students and institutions uncritically to the AI logic of power would be, as stated in the previous section, to accept a loss of sovereignty, solidarity, and security in thinking, submit ourselves to cybernetic subsumption and, thus, let power think for us.

What is interesting in this part is above all to relate everything said with the challenges of education, the pedagogical and ethical processes of the formation. A starting point is to be fully aware that AI simply does not exist, rather thought with digital support. We need to decide how the poorly denominated “AI” will be managed, in the academic setting, so that it is its own, sovereign thought. Understanding that the platforms offered, like Deep Learning, Chat-GPT, Google, etc., embody algorithms taught to machines from the perspective of enterprises. But knowing, also, that we can use them with limits and advantage to protect our sovereign, independent, and intercultural thinking, as long as we place our intelligence, principles, and values to command the machine.

Here, we return to Kate Crawford and an epistemic argument we have also applied in the critique of Cartesian thought in health: power turns scientific disciplines and instruments – in this case the so-called “AI” – into tools to consolidate and extend its hegemony. For power, AI is an essential instrument of control over the world and over the speed of knowledge on that which is favorable to the accumulation and the great sovereign 4.0. To confront its use, we need a theory that takes into account the States and corporations that manage it, extraction mining, massive capture of controlled information, and management of production systems and labor practices of growing benefit for companies [34, p. 32].

Or in a broader sense, convince ourselves that the only response that can be offered from academia to the challenges of a world where life is at serious risk and where we are being condemned to ignorance and scientific illiteracy, is the profound transformation of the pillars of thought and of university action.

#1 Urgency to dispute knowledge to rethink bioethics, rights, and practices of deep reform

It is not appropriate to deal here with the broad spectrum of the current struggle of the Latin American people for life, the profound reform of the health system,

and well-being. Palpitating experiences, like that of the Colombian case, are emblematic signs of creativity and resistance from an enlightened citizenry and the public power that represents it. Thus, reliable testimonies have emerged, like the monumental report by the Truth Commission, magnificently summarized by Saúl Franco, one of its members [38]. Or the robust collection of proposals on the right to health and social security, which appears in a recent publication edited by Gabriel Jaime Otálvaro and Juan Guerrero [39]. For our part, we focus on the topic at hand here.

In the previous sections, we have tried to leave behind a critical overview of the threats and challenges exerted on university thought and work. We have sought to establish compelling arguments regarding the need for a process of critical reflection and reform of our thinking.

A recurring argument of our analysis has been the urgency of taking much more seriously the frontal challenge presented to universities by the catastrophic nature of the global health situation and the paradoxical collapse of bioethics. Almost inevitably, the seriousness of our diagnosis on the state of the matter entails the imperative of triggering a sustained process of critical reflection on thought, the university, and the health system. Not to react exaggeratedly with superficial appreciations that lead us to an inconsequential reformism, but to rethink ourselves comprehensively.

In all this great challenge, a special place is occupied by the obligation to break the straitjacket of the hegemonic paradigm established since colonial times in the sciences and that works in accordance with an economic system whose logic is the accumulation of private capital at the expense of an entire people.

In an article of ours, titled “The social determination of health and the transformation of law and ethics. Meta-critical Methodology for a responsible and restorative science”, published in the *Global Public Health* journal [40] and later replicated in the *Redbioética/Unesco* journal [41], we made public our thesis on this desired paradigm shift for the field of health and life sciences. We also outlined the necessary transformation of the methodology we must achieve to be consistent with the trend of decolonization of science.

It is worth highlighting below some outstanding points of the proposal, but for more information we refer readers to the aforementioned article [40,41], based on our latest book originally published in English [4] with a translation into Spanish [10].

The essential starting point is the need for a *meridian clarity on the hyper-neoliberal sociohistorical context of our countries* and the corresponding ethical crisis of the civilization that underpins it. For health and the protection of life, that is vital because it permits tracing the socioeconomic, cultural, and political setting of co-

llective health, understand that there is a social determination of life and of health that must be studied to explain both the formation of protective processes we must integrate onto health promotion, as well as the unhealthy ways of living we must establish in a comprehensive and realistic programming of real prevention; all that, within the framework of our society, where inequality grows exponentially and dismantles rights.

The second challenge refers to *rethinking the pedagogical and methodological bases of health formation* to get out of the straitjacket of linear and monocultural functionalist thought, that overcomes the strategic ignorance that today penetrates the ways of thinking of a positivist specialism with a Cartesian and biological foundation, that denatures both the public health field and the clinical, breaking their unity and mutual dependence. Concomitantly resolving the breach between collective health and public health and, lastly, establishing true intercultural participatory formation, which connects structurally the advancement of university academic knowledge and community knowledge.

Solving this challenge will gradually allow cultural competence to be given to care and clinical training (“structural”) required for formation: 1) clinical and surgical specialists highly qualified in their field, but sensitive, empathetic and respectful of the town from which their patients come. And 2) will enable, likewise, reaching a new and rigorous formation of specialists in public health and collective health, trained in their specializations with participatory and coherent scientific methodology.

Achieving both previous strategic objectives will not be possible if those efforts are not closely linked to a *profound transformation of bioethics and rights*. That struggle necessarily implies that academic knowledge be constructed with critical thought and epistemic humility, which are indispensable to solve, in the praxis, the sins of an arrogant expertise formed in faculties that have contaminated their programs of an arrogant culture and technocratic educational entities. A notable expert on this problem, David Sackett, published in the *British Medical Journal*, under the title “The sins of expertise and a purpose of redemption” [42], a devastating critique, prepared with a brave sense of self-criticism on the regressive role of many institutions and their obedient biomedical technocracy.

In our work, I have tried to explain the path complex thought had to follow to construct that cherished critical methodology [4]:

Understanding that strategic ignorance and scientific illiteracy are resources of a governance in health functional to power.

That said governance flourishes and survives in scenarios with ethical collapse of policy and management.

That higher education and especially the entire graduate education, specifically from the Global South, constitutes a reproduction and amplification platform of an academic system subject to clear epistemological and intellectual-cultural dependence.

That around the circumstances described, a process of serious loss of ground for the consolidation of rights and the stagnation of justiciability is articulated.

Within this analysis framework, we must redefine principles of justiciability and rights. Assuming the bioethical task and formulation of rights as a collective product, as a process that is understood and works in intercultural code. Hence, overcoming the biological determinism and purely care logic, to look at the vast horizon of collective health, to protect health in ways of living and in relations with nature.

Said challenge may be pondered from different perspectives and enunciation settings, but we deem it powerful to approach it from the horizon of visibility and the tools of Latin American critical epidemiology. In doing so, it is quite important to consider the dilemma that Bolívar Echeverría raised between functional reformism and a profound reform that subverts the substance of the social system, to achieve a full and healthy good living [43]. The latter, as an effective transition movement in the right to health, essential to subvert the substance of current legislation and rethink the laws and norms that define what is justiciable.

In the framework of a critical ontology of hyperneoliberalism, we employ the different enunciation principles that must be adopted to think about integral bioethics, and from it, work the settings and content of full justice. In the core of that operation, we locate the critical paradigm of social determination, that allows us to break down the processes that generate and contribute to distributing, regrettably with profound inequality, the health conditions at regional level, in ways of living of the social classes with their gender and ethno-racial relations, and in the forms of social-natural metabolism that characterize our relations with nature.

From this logic, and applying an intercultural perspective, the rights of nature and those that protect productive ethics begin to appear; of consumption, the rights to social and environmental protection, organized and institutionalized, as well as cultural spaces and the rights to healthy spaces to live.

This set of principles and transformations require a new methodology for the scientific knowledge we have denominated *metacritique*, which here we can synthesize into two epistemic principles: intercultural integration of thought forms and the use of complex thought to understand the multidimensionality of health, dialectically articulating the qualitative expressions (narratives) and quantitative expressions (statistics), to overcome the inductive-empirical logical scaffolding of old statistics

and the grounded theory of conventional anthropology [4,41].

Bioethics is no longer a problem restricted to individual health, to curative care procedures, limited personal etiological prevention, and health promotion from the services. The bioethics we propose applies to the promotion and protection of life in four interdependent expressions of it, which constitute the golden rule of full health, because the movement of life and the embodiment of healthy ways of living depend on these: 1) *sustainability* (conditions of continuity and enrichment of not only human life, but also of ecosystems); 2) *sovereignty* (freedom and autonomy to construct, organize, and protect life with characteristic thought and organization); 3) *solidarity* (fair management of the relationship between the collective right to solidarity life and the individual right); and 4) *comprehensive security* (of life and ecosystems, healthy and protective society-nature metabolism).

With these four “S” of life, we developed new conceptual tools and a meta-critical methodology; we have generated new instruments to investigate and monitor good healthy living; we have rethought the designs of our graduate programs, and can address a more consistent debate about bioethics and rights. It has also served to reflect critically on the role of research ethics committees, proposing a modification of the system and the evaluation tables.

## Corollary

Universities and research centers call for a university reform for the 4.0 era, which leads us to discuss the substance of knowledge freed from the straitjacket of Cartesianism; that distances itself – in its concepts, methodology, and its practical instrumental projection – from linear empiricist thinking; breaking its blind connection with power; which assumes with courage and lack of prejudice the challenge of rupturing the positivist shell that drowns us in self-complacent arrogance. As spaces of self-awareness, universities must open the doors of a fruitful interculturality, enrolling us in a philosophy of full epistemic justice.

This is a cry that has been global, but which took hold with special force in centers of academic and social thought of the peoples of the South. For decades, from Latin America, we have generated and disseminated consistent alternatives for research. But in more recent years, it is comforting to know that we are not alone, that in other latitudes of the Global South and, which is more, in vital nuclei of academic thought from the North, there is a significant echo.

Personally, I have lived with hope the experience that while backward representatives of the old academy

do not understand or question the value and practicality of our struggle, voices of encouragement reach us from leading spaces in the North. An editorial from the prestigious journal *Lancet*, signed by its editor-in-chief, states:

We are trapped in a linguistic cage from which few of us can escape [...] We feel comfortable in our epistemological prisons [...]. If we free ourselves, we are given a different vision of the world [...] freeing ourselves, we can only marvel at our own provincial limitations. “Critical Epidemiology and the People’s Health” (2021) by Jaime Breilh [...] is a magnificent challenge to Western scientific traditions that support medicine and public health [44, p. 12].

I am very grateful for the honor of voicing my opinion from this academic forum of one of the most prestigious universities of Colombia and Latin America. It fills me with emotion that this brief essay is a product of my participation in the solemn event in which we celebrate the first 60 years of the National Faculty of Public Health. Reflections also inspired by the exemplary executions by the teacher Héctor Abad Gómez, that great thinker of public health, before whose memory I bow with respect and admiration. Inspired, additionally, on the struggle of great friends I had the fortune of knowing: Pedro Luís Valencia and Leonardo Betancourt. They gave, like him, their lives to defend the right to health. What an honor to refer here to a people whose president describes the country as “Power of Life”!

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