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Health as science and the biological body as an artifact: the case of Brazil's national TV news program Jornal Nacional

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Abstract *This article presents the findings of a study of the coverage of health, science and technology during 2012 by the* Jornal Nacional*, a national television news program in Brazil produced by the* Rede Globo de Televisão*. A total of 246 news stories addressing health-related topics were analyzed, half of which addressed scientific research, technological innovation and hospital care, and were shown to represent a doctor-centered discourse. The findings also show that 82% of the news stories concerning science and technology advertise products that are about to be introduced onto the market, illustrating the commercial nature of this research. The article discusses two aspects portrayed by these news stories that characterize the biological body as an artifact: the construction of a virtual and fragmented body through the diffusion of images of the inside of the body; and the importance of biotechnological issues, which leaves life processes open to molecular manipulation and alteration. The study also questions the nature-culture hybridization present in biotechnological objects.*

Key words *Biotechnology, Medicalization, Media*

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Introduction

The impacts of the advances in biomedical sciences and of the centrality of media space on everyday life has marked political, ethical, and epistemological implications for the healthcare field in the twenty-first century. Benchmarks in the field of medical sciences inform regulatory norms in various social spheres and drive advances in the medicalization of everyday life. In a social context in which everyday life has become increasingly "mediatized" and social identities and integration are produced through consumption, the media has become a critical space in the process of subjectivation and in the production of ways of thinking and behavior. Despite being limited by self-referentiality and the underlying incompleteness and speed of the modes of production of mass media, concepts of increasing complexity are translated and incorporated into the market. In this respect, Castiel et al.[1] discuss the emergence of regimes of truth grounded in contemporary technoscientific rationality arranged as *biopolitical apparatuses imbricated within health communication processes* that produce the spectacularization and moralization of lifestyles.

The classical notion of communication as an unidirectional process has been overtaken by the idea of networks. Emitters and receivers are not autonomous, but rather part of a multipolar communication network in which communication is not so much the transfer of meaning, but rather a web of meaning forming a "symbolic market"[2] that permits the production, circulation and consumption of symbolic goods. Problematizing the enunciation of risks, forms of reductionism, discredit and beliefs portrayed through media channels, Vasconcellos-Silva et al.[3] suggest that:

unlike Frankfurtian primordial logic, processes involving the production of meaning are interlinked at various levels through which the ideas and representations that sustain communication and group identity circulate; the cultural-historical level of the imaginary as the cumulative production of ideas that circulate as references that are always susceptible to resignification.

The television news program *Jornal Nacional* occupies a critical position in this network and is therefore both influential and strongly influenced by multiple linkages. As such, the topics, discourses, images, content, languages and repertoires featured in news stories concerning health science and technology aired by the *Jornal Nacional* constitute the imaginary of this program's audience. We therefore discuss a set of notions of health that shape contemporary society. It is worth highlighting that 50% of the science and technology news stories aired by the *Jornal Nacional* in 2012 were produced and broadcast in Europe, Asia, and North America. We therefore aim to use this media space to problematize how "breakthroughs" in healthcare science and technology are constructed in relation to health needs, based on knowledge of which health science and public health are an intrinsic part.

The average viewer in Brazil watches approximately four hours of television a day. In 2013, 98% of households, including many without basic infrastructure and facilities such as a refrigerator, had a television[4]. Between 2012 and 2015, the average audience of the *Jornal Nacional* varied between 22 and 25 million viewers a day, which is equivalent to between 25 and 33 television ratings points as measured by the *Painel Nacional de Televisão* – IBOPE[5] (the National Television Panel of the Brazilian Institute of Public Opinion and Statistics). These totals represent over 6.3 million households in the country's 14 major metropolitan areas.

Theoretical and conceptual frameworks: the consumer society, reflexivity, biopower and nature-culture hybrids

As will be seen, the analysis of scientific and technological knowledge about the human body, life, and health – generator of widely consumed television news stories – calls into question contemporary society. We chose the following set of theoretical-conceptual frameworks to contextualize this discussion: the consumer society and individualization, reflexivity and the risk society, and biopower and nature-culture hybridization.

It could be said that the impacts of the consumer society range from the biomolecular level to the wider geophysical aspects of global climate change. What is centrally at stake here are human beings, who are becoming increasingly individualized and whose existence is sustained by the market. They in turn depend on this market to offer themselves as a "human resource" and produce identities. Ultimately, *individualization means market dependency in all dimensions of human conduct*[6] and is a core element of the organization of a society dictated by the supremacy of the market, where the individual-consumer him/herself is a good[7].

Another core element of the organization of the contemporary social forms that condition the

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production and consumption of health goods lies in the concept of reflexive modernization. Modernity is grounded in a view of the world that sees the sciences as a knowledge paradigm: reflexivity leads to the diffusion of scientificity and technological incorporation throughout everyday life, which, among a broad range of other effects, entails the reification of health. Once objectified, health ceases to be an inner value and becomes incorporated into the goods (medication, health facilities and services) that people depend on to attain their full health potential[8]. The dissemination of huge amounts of technoscientific health information by the media homogenizes the supply of health products and procedures, massifying and standardizing not only health needs, but also those related to beauty, hygiene, diet and mood. As such, by incorporating technology into everyday life, reflexivity in the age of modernity powers an ever faster engine of needs. According to Giddens[9]:

It is often said that modernity is marked by an appetite for the new, but this is not perhaps completely accurate. What is characteristic of modernity is not an embracing of the new for its own sake, but the presumption of wholesale reflexivity

One of the consequences of the success and crisis of modernity is manufactured risk. Risk is not pre-given, but rather produced. Every day we are faced with the unintended consequences of reflexively applied scientific and technological knowledge, ranging from climate change and nuclear accidents, to multiresistant bacteria and financial crises. Apart from a world crisscrossed by uncertainties, reflexive modernization produces and widens not only knowledge zones, but also lack of knowledge. Lack of knowledge resulting from the incapacity to know, inaccessibility, knowledge selection, and concealing lack of knowledge itself[10]. There is constant tension between scientific soundness and reflective liquefaction. Within this context, health is threatened on several fronts, including unknown sources, creating and stimulating a culture of risk management. Paradoxically, in a social context that values individual performance, dealing with risk requires constant advances, as in the case of extreme sports and other social practices that involve risk[11]. This process of manufacturing uncertainty, lack of knowledge, and risk is underpinned by a search for control in order to intensify the medicalization of society through increasing the incorporation of technology into health and body interventions. Television is one of the spaces in which this process of medicalization is manufactured.

Looking at the world and narrating what one sees, while producing and defining objects produces us as subjects. Though invisible, regimes of visibility and enunciation and processes of objectification and subjectivation are created and triggered through apparatuses, lending the latter a dimension of power and strength[12]. The doctor-centered apparatus views the generic biological body as the only true object of medical knowledge, where medicine is a hegemonic practice capable of defining what is "normal" and pathological[13]. In these terms, medicalization results from a perspective that defines pathologies and patients based on the general laws of biomedical science that in turn constitute the knowledge base that sustains and shapes this apparatus.

The medicalization of society is one form of biopolitics, that is, a strategy of power for controlling life processes such as birth, morbidity, and behaviors, through prescriptions of conduct, medication and medical interventions in the body, urban settings, and people's living conditions[14]. Throughout the twentieth century, medicalization transcended purely medical issues related to salubrity and disease, taking on a regulatory role through which the limits between normal and abnormal were defined in various fields. According to Zorzanelli et al.[15], transformations at the turn of the twenty-first century led to the emergence of new social and technoscientific consequences associated with medicalization:

comprising a new biopolitical economy of medicine, health and disease, changes in ways of living and dying, the formation of a complex arena in which biomedical knowledge, services and technology are increasingly intricate, and a new and increasingly tight focus on optimization and individual improvement by technoscientific means.

Biopower penetrates not only behaviors, the disposition of subjects to living, and culture, but also organic, intracellular, and biomolecular life. A bioeconomy develops in its wake, which funds research, creates biovalue and a market for goods and technology aimed at the control and production of tissues, cells, genes, viruses, and beings, hybrids of nature and culture[16]. Biotechnology has a profound effect on the nature of life, not only at the molecular level, but also from an ecosystem and social point of view, breaking the epistemological boundaries between the natural world and the world of men. The incorporation of scientific and technological knowledge into everyday life conditions the production of hybrid beings (agricultural goods, animal cultures, syn-

anthropic organisms, insects, viruses, bacteria, vaccines, etc..) that are apparently natural, but whose existence is coemergent with or produced by human activity. In this way, modernity itself jeopardizes *nature* in the context of contemporary society[17]. The environmental crisis does not differ from a society in crisis. There is no untouched wilderness; nothing may be exclusively limited to the natural world[18].

Material and methods

This study analyzed 246 news stories addressing health topics presented by the *Jornal Nacional* during all 12 months of 2012, comprising seven hours and 15 minutes of video made available at http://g1.globo.com/jornal-nacional/videos and accessed using the keyword SAUDE (health, Table 1). The 246 stories were presented in 159 editions of the *Jornal Nacional*, which means that the topic of health was featured in half of the editions presented throughout the year. Furthermore, health was the topic of the opening story of nine editions of the program. Health science and technology was the central theme of 49 stories, comprising a total of one hour and 33 minutes of programming and accounting for 20% of the stories and two opening stories.

Thematic categories

An analysis of the central themes of the 246 stories showed that 87% of the sample featured the following themes (Table 2): *hospitals* (28%), *health science and technology* (20%), *habits and behavior* (12%), *the health products and services market* (11%), *epidemiology* (10%), and the *medical profession* (6%). Apart from being the most common theme, *hospitals* was the secondary topic in 13 stories concerning research and technological advances and in 13 stories about market regulation, healthcare plans, and consumer protection.

Table 1. Number of editions, news stories and duration per month.

Month	Edition	New stories	Duration
January	16	32	50m 11s
February	11	16	25m 46s
March	13	22	36m 56s
April	17	26	52m
May	16	23	37m 05s
June	11	22	33m 29s
July	11	22	35m 37s
August	14	20	36m 49s
September	9	13	25m 33s
October	15	19	32m 36s
November	7	8	20m 13s
December	19	23	49m 28s
Total	159	246	7h 15m 43s

Results

Disease control

Health science and technology was the most common theme and received the most extensive coverage alongside *hospitals*, another core element in the organization of the doctor-centered apparatus. The news stories tend to regard scientific research as a means of developing biological, physical and pharmacological intervention tools aimed at domination, power, and control over disease and the body. In 80% of the stories, the theme is approached by way of disease, or physical or sensory disability. Even the stories about research, which do not mention consumable products, refer to diseases and products. For example, a story about the Nobel Prize in Chemistry awarded for research on cell receptors featured on 10 October 2012 mentioned the following: *Half of the drugs work using g-protein coupled receptors; greater understanding of how these receptors work will greatly help the* ***production of medicines for diseases such as diabetes, cancer, and depression, which are more efficient and have fewer side effects***. By treating disease as nature and placing it at the center of work and knowledge, the idea of health as the denial of disease becomes a naturalized concept[19].

With respect to the diseases most frequently addressed by the news, 23% of the stories were about neurosciences, with emphasis on Alzheimer's disease, 19% were about neoplasm treatment innovations, and 30% dealt with the following: heart disease (8%); infectious diseases (8%), with emphasis on HIV; endocrine diseases (6%); bone tissue diseases (6%); and respiratory diseases (2%). The most frequent topic was neurological disorders, which accounted for 25% of the sample, demonstrating the huge interest in the brain in search of neuronal and biomolecular explanations and solutions in response to memory function and dysfunction, sense, speech and mental disorders, and mobility impairments.

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Table 2. Weight of categories by news stories and duration.

Category	New stories	%	Duration	%
Hospital	68	27.6	107m36s	24.7
Science and technology	49	20.0	93m2s	21.3
Behavior	31	12.5	63m59s	14.7
Market	28	11.2	49m52s	11.3
Epidemiology	24	9.7	34m31s	7.9
Corporação Médica	14	5.7	32m30s	7.5
International	16	6.5	23m26s	5.4
Police	9	3.6	13m5s	3.0
Society	5	2.4	14m55s	3.5
Health Budget	2	0.8	1m9s	0.3
Total	246		7h15m43s	

June 4

24 drug users (cocaine) *were treated at the Institute of Psychiatry at the University of São Paulo using* ***transcranial magnetic stimulation*** *…a technique recognized by the Federal Council of Medicine as* ***a treatment for depression***.

Cancer research and treatment innovations were the second most featured topic among the science stories presented by the *Jornal Nacional*, including new chemotherapy techniques, nanodrugs, and inoculable proteins and genes for various types of illnesses, including bone metastasis, ovarian, breast, pancreatic, and skin cancer, and leukemia. Apart from pharmaceutical drugs, these stories also featured new ultrasound and robotic surgical procedures.

Pharmaceutical and hospital products

The analysis of the stories about this type of research showed that there were a number of recurring themes: 43% of the stories about research in health sciences and technology field addressed drug manufacturing, including nanodrugs, enzymes, synthetic genes and DNA, antibodies, vaccines, contraceptives, hormones, and diagnostic tests; 39% were about procedures, techniques, products, and equipment, such as the production and use of stem cells, embryo selection and transfer, stent manufacturing, soluble chips, vitreous bone graft, products for people with a visual impairment, neurosurgery, high intensity focused ultrasound, transcranial magnetic stimulation, deep brain stimulation, and robotic surgery. In other words, 82% of the content focused on successfully tested products and procedures or promising new drugs and techniques that would soon to be available on the market.

It is as if these "breakthroughs" were not determined by the object of the research, the methodology used, the interest in and search for given results, and validation criteria. What is observed is the "breakthrough" myth, when the navigator's mission and route is already determined before setting out: numerous pharmaceutical drugs manufactured for other purposes or without any clinical use are later discovered to have a desired effect for a given disease.

February 9

American scientists today announced ***a breakthrough in the fight against Alzheimer's disease and the researchers used a drug that already exists*** [...]. *The researchers* ***discovered that bexarotene stimulates the production of another protein, APOE****, which the study showed was capable of dissolving the platelets that lead to the symptoms of the disease*.

The quest for advancing medical science using the product of new knowledge renders older knowledge outdated. This cycle reinforces the need for new "breakthroughs". This incessant demand for new knowledge is apparent in a large majority of the stories presented by the *Jornal Nacional*.

Virtual corporality

Through the television screen, we enter into a meticulous creation of a wondrous universe that becomes visible, aided by graphic animated illus-

trations of organs, nerves, cells, molecules, and particles. The futuristic images of equipment and intervention rooms illustrate this universe designed by innovations in health care technology processed in laboratories that are special places apart from the everyday world.

What is the point of a television company presenting a whirlwind of images of equipment, instruments, and screens displaying various electronic forms and images of the inside of the body? The story is certainly not concerned with explaining what these instruments are. Such a setting confers extraordinary legitimacy to the knowledge produced in these settings: knowledge gestated in a nonhuman environment, tested on artificially modified life forms, strains of mice with disorders, such as diabetes or melanoma, and cultures of selected cells. These procedures are tardily applied to human beings, approximating the wondrous universe built elsewhere. Another side of the virtual corporality manufactured in this scientific environment are electronic images of the inside of the body. When broadcast to a mass audience through television they provide a certain degree of visibility that virtualizes corporality and deprives it of its subjectivity as a lived body. According to Ortega[20], *The virtual appears as an expansion of the real and the materiality of the body image is presented to us as the materiality of the physical body. It is a manufactured body, stripped of subjective dimension and gaunt*.

The production of concepts and needs

The news stories reveal the capillarization of "reflexive modernization" into less rational levels and the extent to which this process condenses desire and mobilizes actions guided by ideas that are manufactured in the wondrous world of the biomedical sciences. With regard to the science stories, health needs seem to arise out of the "natural" nature of the body. However, if we turn our attention to the elaboration of the news story, we observe a process of symbolic production of concepts and needs.

The most frequently used settings in the news stories were laboratories and hospitals: 47% reported research conducted in laboratories (animal/in vitro studies), while 29% addressed hospital procedures where patients recount their personal experiences. Watching someone on the screen recounting his/her experiences transforms the disease from a question of science into an everyday part of life, which permits a *pathos* of closeness that evokes empathy and interest in the medical explanations. Personal drama creates an environment that enhances the value of the technological procedure that is the focus of the story. Accounts indicate these people's health needs, which, as a rule, are reduced to the diagnosis of an illness. The fabrication of the procedures used to meet these needs are explained in the news story using specific language. A given vocabulary is taught in a meticulous effort to educate the television audience. The "expert system"[9] gains codes - statements, images, and names – by which specific knowledge is extended throughout everyday life. It is evident that the process of manufacturing "breakthroughs" simultaneously produces phenomena that are dependent on this form of knowledge, thus creating a conceptual repertoire that gains concreteness in bodies, molecules, cells, tissues, and organs. Ultimately, the initial need is transformed into another that includes new knowledge wrapped in the hope that these new drugs and procedures will be made available to society.

The body as a construct

One the most striking aspects of this theme is the extreme fragmentation of the body. The high success rate of procedures can be put down to the extreme particularity of the intervention. A body composed of particles is accessed, and the greater the precision of biochemical, biophysical, and mechanical instrumentation, the greater the success of the intervention.

March 31

The new technology can be used for tumors in the abdomen, prostrate, head, and neck and for gynecologic cancer. […] ***with surgery performed by this robot there are no cuts: the three mechanical arms access the tumor, which is removed through the mouth***.

The stories announce an increasing search for precision, through tissue engineering strategies using stem cells, embryo selection, delivery of drugs encapsulated in viruses, manipulation of antibodies and membrane receptors, creation of DNA, synthetic genes and nanodrugs, reconstitution of nerve fibers using cells extracted from other tissues and electrical discharge, insertion of chips, and many other types of probing and manipulation techniques, which testify to incommensurable knowledge of and domination over the biophysical and chemical processes in minute parts of the body. In other words, specialized and precise knowledge with which it is possible to correct the failings of a body that naturally displays various anomalies.

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In addition to the construct of extreme fragmentation of the body, the news stories treat the body as if its life can be captured. The life present in the stem cells, genes, embryos, and in parts of the body such as the umbilical cord, dental pulp in milk teeth, and bone marrow, can be removed from the body, transferred to another body or other parts of the body, and stored for use in another time and space. The fragmented body gains increasing plasticity through sophisticated biophysical and chemical processes. As a consequence, a series of actions and manipulations through which life itself is objectified and reified can be observed.

February 14

The baby was generated with the aid of a ***procedure that is unprecedented in Brazil and which selected embryos based on DNA analysis, and the cells from the baby's umbilical cord will be used in a future transplant****. Cells taken from 10 embryos were analyzed. Two were compatible and one ended up being successful.*

Other broad themes were addressed by 30% of the news stories, which can be grouped into the following three categories:

a) The human microbiome, intercellular communication and cell receptors.

b) Human reproduction – reports on assisted reproduction, fertilization and embryology. There is an interface between this category and the group that addresses themes linked to stem cells and the creation of genetically modified embryos to supply biological material.

c) Biomedical engineering and genomic medicine accounts for 16% of programming involving science and technology and addresses topics linked to the human genome, genetic selection, producing isolated genes, synthetic DNA, stem cells, and repair or replacement of heart muscle fibers and tissues.

These news stories are of particular interest in so far as they provide visibility to a frontier currently explored by the biosciences and biopower, which has implications for various dimensions of human existence, and where life processes can be reversed, rebuilt and modified in the laboratory. On this ground, natural life no longer serves as the norm against which decisions may be judged and health concepts enunciated[21].

Conclusions

The findings suggest that news stories about scientific research and innovations in health care technology overlap with those about hospital care and the health products and services market, accounting for 59% of the *Jornal Nacional's* health programming, and constitute means of production and access to health goods. On the one hand, 80% of the news stories about science and technology feature diseases and physical disorders, 39% of which focus on hospital procedures, which characterizes the doctor-centered apparatus and commands the means of health production. On the other, 82% of news stories about scientific research focused on the introduction of new drugs and procedures to the market. In these stories health as a business area is a component of the same apparatus that underpins the medical sciences, which converges with the concept of bioeconomy coined by Nikolas Rose[22].

The way in which the body is dealt with by these news stories is characterized by two factors: imaging technology and the molecularization of interventions. Viewing of biomolecular functions and processes using computerized imaging techniques, plus the range of intervention possibilities afforded by biotechnological techniques, radically change the notion of body and biology itself. On the one hand, these processes lead to the progressive objectification, fragmentation, and virtualization of the body, while the biological space becomes increasingly open to manipulation and change. The constitutive of nature of the body is no longer pre-given and as such it becomes subject to engineering and manufacturing. These changes have sparked an extensive ethical debate in an attempt to regulate the limits of interventions in the processes of life.

Considerations on advances in bioscience and biotechnology, nature and culture

This discussion strips away certain aspects that naturalize biomedicine and, consequently, health. The radical nature of the appropriation of life at the molecular level destabilizes the distinction between natural and social, human and nonhuman and calls into question the dichotomies that underpin the *episteme* of modern scientific rationality[23]. This *nature*, introduced into an objective and distant world, that in order to be known depends on the methodological mediation of scientific reasoning, tends to become denatured. Latour[24] compares this *episteme* of the modern sciences to Plato's allegory of the cave: the dark, subjective, and unstable inside, where imprisoned men view shadows as reality, and the bright, objective outside, determined by natural

laws that men can only attain to through science. According to the writer, this objectivity of the natural world falls into crisis as humanity incessantly creates the nature of which it is part and in which it reproduces and recreates itself.

The natural truths formulated by modern scientificity become a problem, while the laws of an external and unified nature may be understood as constructs affiliated with a form of historicity. Minayo[25] problematizes this reflexive movement, which includes a notion of complexity, the plurality of subjects and rationality, multiple and simultaneous temporalities and causalities, the crisis of certainties and regularities, bearing in mind the opaque dimension of language and the partial and unfinished nature of reflexive processes in search of truth.

The social changes that have taken place over the last 50 years have led the majority of the fields of science to question its univocal rationality, which is illustrated by the proliferation of superlative semantics incorporated into the dictionaries of practitioners and researchers: comprehensiveness, interdisciplinarity, interface, multidisciplinarity, multiprofessionality, transdisciplinarity, interrelations, interinstitutionality, and many others. This language movement suggests disquiet and a search for more broad-ranging and interconnected analysis and actions and reflects the inadequacy of unidirectional and univocal proposals.

In this field of tension, subject and subjectivity take center stage. Touching on these tensions in the health field, Castiel[26] asks which subjectivities are produced within the context of technology incorporation:

That is to say, what role do advances in bioscience and biotechnology (such as positron and single photon emission tomography of the brain) play in the production/change of our own person and 'human nature' and, also, of the sense of what is normal and pathological?

In search of a *conception of nature that is not dissociated from the human construction*, Czeresnia[27] calls for a "*conception of reality that is at the same natural and sociocultural* [...] *the construction of a new episteme that succeeds in integrating the natural and human sciences. A new basis for revisiting the synthetic and comprehensive spirit of physis*.

Viveiros de Castro[28] suggests that Amerindian cosmology serves to ground a rigorous ethnological critique that shifts and reorders:

two paradigms that are traditionally opposed under the labels of nature and culture: universal and private, objective and subjective, physical and moral, fact and value, given and established, necessity and spontaneity, immanence and transcendence, body and spirit, animality and humanity, and so on.

In "Amerindian perspectivism", unlike Western naturalist monism, the foundation of the world is subjectivity itself: a generic background of "humanity" is dispersed throughout the real. A subjectivity immanent in all things, of which all things are constituted, humans and nonhumans, contrary to our conception that professes animal or natural origin, and where "humanization" is a late event that is the conquest of nature. Hence, cultural otherness as a modern soul that separates humans from other entities. In Amerindian thought, entities are distinguished by their distinctive natures and distinctive bodies, unlike Western multicultural relativism that:

supposes a diversity of subjective and partial representations, each striving to grasp an external and unified nature, which remains perfectly indifferent to those representations; Amerindian thought proposes the opposite: representational or phenomenological unity… indifferently applied to a radically objective diversity. One single 'culture', multiple 'natures'; constant epistemology, variable ontology - the perspectivism is multinaturalism.

From another perspective, Rabinow[29] problematizes the notion of artificiality in opposition to nature, which permeates the biotechnology discussion. Unlike naturalist monism, this perspective holds that nature is malleable and open to an *infinity of potential differences. These differences are not prefigured by final causes and there is no latent perfection seeking homeostasis. If the word 'nature' is to retain a meaning, it must signify an uninhibited polyphenomenality of display.*

As we can see, current biotechnological production begs reflection on the social production of health that goes way beyond the classical formulation of social determinants of health, restricted to a purely social critique that sustains the dichotomy of the nature and culture paradigms. Indeed, schools of thought in the field of health have not touched upon the supposed naturalism of the biomedical sciences. The universal biological body, the foundation of the doctor-centered apparatus, continues to be held as the hegemonic regime that guides practices, clinics, technical healthcare models, organizations, public policy, systems and the health products and services market[30,31].

The success of modernity produces contradictions that lead to its own crisis, triggering processes that modernity itself is not capable of

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containing. Life control strategies, which are increasingly molecular and genomic-based – products of the biotechnology age – highlight the role of biopower, biomedical rationality, and the social production of the biological body, which undermines the objective "purity" of the *natural* world and models that promote the containment of subjectivity.

Collaborations

E Caron and F Lefevre participated in the research, methodology, design, writing and approval of the final text. AMZ Ianni participated in the design, writing and approval of the final text.

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