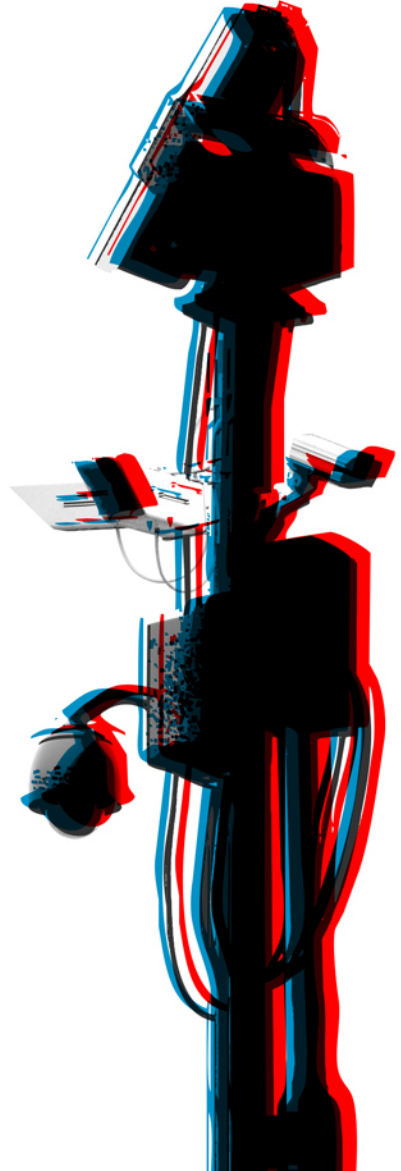


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# PANEL DE CONTROL

INTERRUPTORES CRÍTICOS

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## PLAGUES, MONSTERS AND BIOTECHNOLOGY CHIMERAS: THE TECHNOSCIENCE OF LIFE AND BIOPOLITICAL CONTROL

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### Abstract

This text explores the relationship between art, society and biotechnology through the imaginary associated with the life sciences, specifically through the biopolitical control generated around the fear of epidemics and plagues attacking humans and nature, the fascination with the creation of monsters, and the materialisation of transgenic chimeras by humans. Hybridisation between biological, political, social and economic aspects of biotechnologies leads to the commodification of life and living beings, a dynamic that takes place in the digitalisation of biological matter through bioinformatics and genomics, an to its rematerialisation through tissue engineering or other biotechnologies. This control over life, in the process of becoming productive, redefines what we understand to be “life” itself.

### Keywords

science, technoscience, biotechnology, bio-power, bioart, hybridisation.

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While genetic studies appear to be “the mythical guise of pure science and objective knowledge about nature,” they turn out “underneath, to be political, economic and social ideology.”

Richard Lewontin

One would have to speak of bio-power to designate what brought life and its mechanisms into the realm of explicit calculations and made power-knowledge an agent of transformation of human life. This doesn't mean that life has been fully integrated into techniques that control or manage it: it constantly escapes from them.

Michel Foucault

Biology is usually described as the natural science that studies life, living beings and all their manifestations, while biotechnology is the branch of biology that studies potential practical applications of the properties of living beings and new technologies, such as genetic engineering, in fields like industry, medicine, agriculture and stockbreeding.

Today, biotechnologies have led to the completion of the Human Genome project, the implementation of gene therapies, embryo manipulation and cloning, the creation of transgenic foods and the implementation of xenotransplants. Some of the most widely used biotechnologies are genetically modified organisms, which produce so-called transgenic plants. In 1987, Nature magazine announced that the first successful transgenic plant and by 1996 the agricultural industry began to use them commercially. Today, 4% of arable land has been cultivated with transgenic seeds, and 13% of the world's seed market are a product of genetic engineering (1). The majority are be transgenic harvests of soy, corn, cotton and rape, mainly in countries like the US, Argentina, Canada, Brazil and China. Although in recent years, the most rapid growth is taking place third world countries, which currently account for 34% of the world's total production.

But apart from transgenic plants, there are other kinds of genetically modified organisms, such functional foods, which provide a health benefit beyond basic nutrition, such as vitamin A- enriched Golden rice aimed at combating dietary deficiencies in Asia. Or biofactories, genetically modified plants that can be used to produce raw materials for industrial use, such as rubber-producing sunflowers. There are also genetically modified microbes such us bacteria that decompose oil spills, or microbes with military use that can damage roads, weapons, vehicles, fuel, anti-radar coatings or bullet-proof vests.

We could also include all kinds of mammals cloned through scientific research, like Dolly the celebrity sheep. Or transgenic animals like, for example, the spider-goat, a transgenic goat that produces spiders' webs, or the oncomouse, a mouse with cancer for medical research. Then there's biotechnological

stockbreeding, which produces chickens with more meat, or transgenic salmon that grow more quickly. And, of course, genetic engineering applied to domestic pets, which produces more brightly coloured goldfish and cats that don't cause allergies. These are obviously all patented and registered by the private companies that exploit them commercially.

Other transgenic animals have caused a great stir, such as Alba, the fluorescent rabbit that the artist Eduardo Kac created by crossing it with the medusa's GFP (Green Fluorescent Protein) gene. This is an example of "transgenic art", a living being that was born to live as part of Kac's own household, living out its life as a household pet. Kac thus turned genetic engineering into something domestic and commonplace, which exists in our life as a "pet". The "art work" itself wasn't creating Alba, but the act of bringing the whole process to light in order to attract public attention to the debate on genetically modified organisms (2).

In fact, Alba wasn't created for cancer research or any other kind of medical research, which was why it was "nonsense" and seen as "decadent", with "decadent" meaning decorative. The place of the discussion that this decadent art triggered is occupied by the arguments of multinational companies, science laboratories and experts. Experts usually claim that there are no ethical issues involved, because nobody is getting hurt. Experts shy away from looking beyond the immediate concerns of research laboratories and their research funding. The exclusion of mass audiences from these discussions leaves a void that is filled by (3).

Today, plants, cells, genes and other biological materials are the chosen media for a growing number of artists, while others base their work on eco-installations in the environment. By stripping the life sciences of their pragmatic role and recontextualising them in aesthetic form, they are treading the boundaries between nature and art, just as they try to contribute to generating critical discourse around new developments in science and technology.

Biotechnology industries are launching public awareness and public relations campaigns to promote the idea that the combination of the free market and biotechnology works solely in the public interest, and that they aim to rectify health, population and environmental problems. Meanwhile, biotechnologies are popularly viewed as negative because, on one hand, they transgress the sacred boundaries between the natural and artificial worlds, biology and technology, divine creation and industrial artefacts. It's true that the biotechnology industry's "modus operandi" is suspected of generating deep-rooted problems through the "find a gene, make a tablet and sell it" formula that governs everything. But it's a problem in epistemological and ontological, not just economic, terms.

On the other hand, a supposedly apolitical aestheticising aimed at fuelling the cultural innovations market, in which it is possible to soothe public scepticism by separating it from the biopolitical debate attached to these practices, and by spectacularising it in the special "aesthetic" bunker, can help to educate the public and also indirectly function as an excellent public relations exercise that smoothes and prepares the terrain for future marketing campaigns for new biotechnology products they can market to us as necessary and unavoidable (4).

Another crucial element here has to be the differentiation between various bio-art and biotechnology practices, to allow us to detect when political activism in the area of biotechnology becomes a morally conservative, reactionary or reductionist response to problematic issues, linked to essentialist ideas of life is part of moral discourses that are implicit, and must be made explicit.

As though we were dealing with a new ecosystem to be produced through biotechnology chimeras, life now becomes geneticised information that can be manipulated, broken down and totally transformed. From now on, barriers will have less to do with science than with legal and political issues around experimentation with living beings. This new biotechnological bestiary breaks down classical natural history taxonomies, producing hitherto unknown combinations and hybrids that transcend traditional classification, going from impossible fantasies to commonplace technologies.

In this sense, "biomedica" refers to the hybrid formed between information technology and biological components and processes. On one hand, we think that the "biological" incorporates biological processes that occur "naturally". On the other hand, we refer to the way in which we can think of biology as a technology that allows us to manipulate living matter, through the lens of information technology, in order to combine the immaterial and the material (5). But the fact that molecular biology, through biotechnologies working with IT, reduces life to genetic information obtained from the "molecule of life", from DNA as the 21st century version of the Holy Grail, isn't exempt from political, economic and social implications that we must help to shed light on.

Every socio-historic context has its own way of conceiving and confronting life. Technoscience isn't just neutral knowledge of reality, it's a mechanism for producing social and natural reality. Biotechnologies are less about denaturing nature than about producing a particular nature, because "what we see when we look at the secret of life is life already transformed by the technology of our gaze" (6), and above all because "each historical formation sees and reveals all it can within the conditions laid down for visibility, just as it says all it can, within the conditions relating to

statements" (7).

The foundational myth of modern science asserts that it is possible and necessary to know reality independently of social, political and economic conditioning factors. This means that the scientific subject tells us what the object, or reality, by virtue of his position within a privileged observation point, which is science. This mythical, objective point, cut off from its own context, which leads us to believe that when science speaks, we are listening to an objective rationality that has undistorted access to the intrinsic peculiarities of observed reality (8).

For some decades, the sociology of scientific knowledge has been working so that this mythical objectivity "becomes a specific and particular form of incarnation, not a false vision promising the transcendence of all the limits and responsibilities" (9) that will allow us to show the situational, contingent and heterogeneous nature of all scientific practice.

It would be an appeal to located knowledge, such as the artists collective Critical Art Ensemble refer to from a different perspective when they defend an "amateur discursiveness" around transgenic debates, allowing citizens to participate at certain levels. It shouldn't be that "individuals are left with the implied obligation that they should just have faith in scientific, government and corporate authorities that allegedly always act with only the public interest in mind" (10). As genomes, enzymes and all kinds of biochemical processes are privatised, a pancapitalist policy expands, which only serves to strengthen and extend the economic profit machine. The molecular invasion and control are quickly transformed into new kinds of colonial and endocolonial control: the focus is on consolidating the food chain, from the molecular structure to the packaging (11).

To a large extent, biotechnology is part of an industry and, as such, operates as a "flesh machine", generating new products and services which create new market niches, as it transforms the public's understanding of the concepts of nature, the body and health (12). In response to this, there is a strong ecologist movement that demands greater control of the use of transgenics in agriculture and other fields, given that they irreversibly change nature, generating a dependence on transgenics and disrupting entire farming systems. This situation shows how power relations are intertwined with technoscience, articulating a dense fabric of interrelations in which a wide variety of actors play a role. Nature and society are no longer explanations, if anything, they themselves have to be explained (13). So we have to understand that biology is a discourse - not the world itself, but a discourse. This means that organisms also emerge in a discursive process that is the result of human and non-human elements, based on a set of semiotic-material actors that become active builders of natural scientific

objects. To talk about life today is to talk about the different narratives that are used to define life, because narrative is what gives it meaning, and allows it to be thought about an organised.

And so we have to find a way of relating to nature that is not based on reification or ownership, abandoning this long-term parasitical relationship that Foucault described in his works on the change form natural history to the birth of modern biology (14). Because "nature is not a physical place to which one can go, nor a treasure to fence in or bank, nor an essence to be saved or violated. Nature is not hidden and so does not need to be unveiled. Nature is not a text to be read in the codes of mathematics and biomedicine. It is not the "other" who offers origin, replenishment, and service. Neither mother, nurse, nor slave, nature is not matrix, resource, or tool for the reproduction of man" (15).

In biotechnologies, the part (the gene) designates the whole (life). And this implies that the information gets detached from the context from which it arises or in which it is inserted, turning its back on the specificity of the local, like merchandise. Before life could be reduced to genetic information, it had to undertake a long journey in which we can identify three key moments that overlap today: 18th century natural history from which life takes leave (timeless botanical gardens full of taxonomies), 19th century evolutionism that turns life into history (the ecologic niche, in which the organism is separated from the context) and late 20th and early 21st century genetic engineering, which decontextualises life (genetic databanks of life-information that can be manipulated and transformed) (16).

In an attempt to express this promethean will inscribed in biotechnologised life, in 1999 Eduardo Kac created the installation *Génesis*. On entering the exhibition space, we see a Petri dish containing bacteria in the DNA of which the artist has included excerpts from the book of *Genesis* in the Bible. Kac created an artificial gene by translating a sentence in Morse code and then converting the Morse code into basic DNA pairs, according to a conversion principle developed by the artist for this piece. Kac's significance isn't in the creation of the artistic object, but in the fact that its meaning develops as visitors participate and influence the bacteria's natural rhythm of mutation, transforming the body and the message coded within it.

The act of choosing a paradigmatic sentence from *Genesis* symbolises a reference to man's desire for supremacy over nature, a desire that is divinely sanctioned. The opportunity to change the sentence brings to mind a symbolic gesture, which means we don't accept its meaning in the form in which we inherited it, and that new meanings will emerge as we try to change them.

However, the production of nature will continue to

be political because it continuously weaves power relationships among the agents who are part of the network. Life sciences are political sciences and geneticised life is bio-power, the result of matter and semiosis that are interwoven within power relationships that try to confer a life that is presented to us as natural, although, in reality, it is just the result of a complex socio-historic process with a long history. With the arrival of the modern episteme "make live and let die", Foucault's productive idea of power reveals the change from a disciplinary society to a society of control, in which governability is defended in terms of "security" (17). It's true that life has always been subject to power, the question today has to do with the specific biopolitics that biotechnology contains. This is why it is interesting to recover, connect and update, in relation to biotechnologies, Foucault's concept of biopolitics and its implicit connection between two ways of articulating biological "life itself" (18). On one hand, an information-based view of life control, which emerged in the 18th century with the birth of the sciences of demographics, political economy and statistics, which documented births, illnesses or deaths, quantifying life itself in a sophisticated way. On the other, there was the emergence of the concept of "population", which allowed the idea of managing the population's health to be expressed and made it possible for natural history, biology and then evolutive biology to develop. In this way, the population became a biological as well as a political issue, and now it becomes a genetic issue to be controlled: biology and information technology merge perfectly for the purpose of producing bio-power.

The issue is a life shaped through the systematic implementation of a system of techniques and rationalities, such as the medical regulations inscribed in health or the emphasis on citizen security and the development of a political economy, a moulded life that becomes docile, subject to what is expected of it, a regulated life that avoids fear of the uncertain or strange. For example, the terror that is generated through the imaginary associated with biotechnological wars allows the discourse on new infectious diseases to merge with that of bioterrorism, and thus a strengthening of state control over public health. The US Bioterrorism legislation created in 2002 exercises this function, allowing the public health administration to develop all kinds of strategies.

We're facing a biological war with a long tradition and various levels, such as biological sabotage, and by exploring the history of epidemics we can see how they have often been presented to us linked to wars or military conflicts. For example, we find the first signs of biological sabotage in Thucydides tales of the Peloponnesian war, in which it was said the wells were poisoned intentionally. Plagues, epidemics, fear of contagion and infection are fears that are "more than biological" and become social, cultural and also political elements, elements that Foucault synthesised

historically in two basic reactions: one, anarchic, around the "dance of death" and the other totalitarian, such as quarantine.

We should also take into account biological weapons, the use of pathogenic agents and biological resources like anthrax, banned by the 1925 Geneva Protocol in terms of use, but not research and production, which allowed the development of research programs in many countries that later made experimentation possible in Japan during WWII. There are also elements of genetic warfare based on the eugenic plans of Nazi Germany, inspired by the ideas of England's Sir Francis Galton, ethnic cleansing in search of the pure race, free from any element that could be considered to be a defect in ideal of purity. Even in our own imaginary, cloning appears as the ideal of reproduction of the best specimens, another form of cleansing and selection. And this ideology is still implicitly present in databases of genetic profiles of creative people, although "eugenics" is no longer used anywhere as a onsequence of nazism's atrocities.

We are dealing with a politicised biology that, since the September 11, 2001 attacks in the US, has generated an endless number of biodefence laws, which regulate "life itself". Laws that led to the FBI's persecution, arrest and jailing of Steve Kurtz, a founding member of the arts collective CAE, under an accusation of bioterrorism. His crime was to look at scientific processes through capitalist political economy, displacing the legitimated version of science as something neutral and value-free. Today, Steve Kurtz is still awaiting a definitive trial for the simple act of using inoffensive molecular biology techniques and devising a critical discourse around biotechnologies.

All of this shows that what's at stake is related to the problem of "life itself", beyond specific policies against bioterrorism. That is, in relation to life that is subject to control, regulation and modulation, true bio-power is that which is "a form of power that regulates social life from its interior, following it, interpreting it, absorbing it and rearticulating it." What is directly at stake in power "is the production and reproduction of life itself" (19).

The other side of the plagues and epidemics are the monsters that represent abnormality and are left out of classifications that have no place for them. Although it's precisely the monster that shows us the flipside of the norm, the dark side of order as a mirror of humanity. Etymologically, "monster" comes from the Latin *monstrare*, which means to "show" and indicates that monsters are, above all, strange beings that show or demonstrate something hidden. Teratology, that is, the science of monsters (derived from the Greek *teratos*), is an attempt to document this lack of a place for anomalies, and refers to horror as well as fascination, to prodigies and demons, aberration and adoration, the sacred and the profane (20). The monster connects

worlds that link the real and the imaginary, the normal and the abnormal, the permitted and the prohibited, the visible and the invisible.

Every era creates and has its own monsters, that's why, in our own time, the monster is bound to emerge in the course of this path that aims to transform nature and turn it into simple matter with the serviceability of merchandise. Today, the monstrous has become banal and been transformed into a consumer object halfway between fascination and the fear that leads us to technoscientific chimeras, the product of a rationality that continues to provoke disorder. Disorder that cannot cease investigating that which is said to us in what is shown through that which is monstrous.

Chimeras, unlike monsters, are hybrids par excellence, a product of the fusion of three different animals - a goat, a serpent and a lion - that rises up as a recurring infernal mythological figure that becomes a metaphor for designating new life forms produced by molecular biology. Transgenic chimeras produce a tremendous amount of disorder, making the impossible possible through the infinite hybridisation of a new biotechnologised nature.

Projects like *The Tissue Culture and Art Project* illustrate the imaginary associated with these biotechnological chimeras. They use living material and molecular biology techniques as though the genetic code were digital code, so the manipulation of life becomes the manipulation of code, but with the capacity to re-materialise. The creation of semi-living sculptures through experimentation with live tissue generation led them to projects such as the *Semi-Living Worry Dolls*, *Womb 2000*, where they brought little Guatemalan worry dolls to life. The project provoked a great deal of unease in relation to the perception of the boundary between the living and the inanimate. They followed up with *Pig Wings* in 2000-2001, which involved the artificial creation of a semi-living sculpture that represented fake pig wings, in reference to the saying "if pigs could fly", used to express the impossibility of achieving something. Their latest project, *The Disembodied Cuisine or Semi-living systems as food*, explores other ways of interacting with living systems such as, for example, consuming them as food; in this way parts of an animal can be self-generated and then eaten, without the need for the death of the animal, who can keep living, with a simple biopsy (21).

Here, the interaction with semi-living entities is a conceptual challenge linked to the biotechnological chimera that will blur the idea of the body as an entity that is separate from our living environment. As defined by Lynn Margulis, "a body is a community of cells and, furthermore, the biosphere is one interdependent entity" (22). Semi-living objects are a tangible example of this idea: we can see parts of our body growing as part of our environment, but we definitely need cultural understanding to deal with this

new knowledge and control over nature as a whole. Throughout history, plagues, epidemics, monsters and chimeras have represented the flipside of the norm, the "other" to be banished from the earth and buried in the inferno of the impossible. But today, in an increasingly biotechnologised life, they coexist with us naturally, producing a new nature that is not exempt from a specific biopolitics that regulates and standardises life - although in reality life always escapes through the interstices of becoming, chance and absolute uncertainty. Because we will always be able to say that "when power in this way takes life as its aim or object, then resistance to power already puts itself on the side of life, and turns life against power. (...) Life becomes resistance to power when power takes life as its object" (23).

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