

ON CREATING LIFE AND DISCOURSES ABOUT LIFE: PESTS, MONSTERS, AND BIOTECHNOLOGY CHIMERAS

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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*

Pests, Monsters, and Biotechnology Chimeras: Art, Biology and Technology

The term Mother Nature is quite appropriate if we think that man has a tortuous relationship with her, between fear and admiration, the desire to control and to nearly destroy. Such binary visions of and often paradoxical relationships between man and nature apply to the technologies in the sciences. It is still difficult to overcome the widespread dualistic perception about technology.

Technophilia, borne of an ideology of progress and an evolutionary view of the history of technology (especially after the Industrial Revolution) is hegemonic and largely used as an upbeat speech by the media and technology market. According to this vision, man assumes the role of *demiurge* and rebels against the establishment: above all, against everything that constitutes its finitude and mortality. On the other hand, there are also technophobia discourses, supported by a mythological fear of the destructive forces of human creation and nature that punish those who dare to control or modify it. Technophobic arguments are frequently used by those who accuse technologies of increasing the gap between rich and poor, or between economically central and peripheral countries. But what may appear as an opposition is composed as two sides of one

hierarchical view, where there is a dominant element on one side and a subjugated element on the other.

The bodily and cognitive abilities acquired through the use of powerful digital and biological technologies cast doubt on what seem to be unchanging dualities: the opposition between nature and culture, between the natural and the artificial, between the living and the dead. As these boundaries become blurred, new issues emerge. For example, there is an economic interest in the chain of life (due to the development of biotechnologies), and in virtual environments (with development of the World Wide Web).

Today, biotechnology has 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 producing so-called transgenic plants. In 1987, *Nature* magazine announced the first successful transgenic plant, and by 1996, the agricultural industry had begun to use those plants commercially. Today, four percent of arable land is used for transgenic plants, and thirteen percent of the world's seed market is the product of genetic engineering. Mostly concerned are soy, corn, cotton, and rape; and the countries where transgenic plants are most widespread include the US, Argentina, Canada, Brazil, and China. In recent years, the most rapid growth has occurred in developing countries, which currently account for thirty-four percent of the world's total production (World Trade Organization, 2005).

In addition to transgenic plants, there are other kinds of genetically modified organisms. Functional foods are designed to 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 used to produce raw materials for industrial use, such as rubber-producing sunflowers. There are also genetically modified microbes such as bacteria that decompose oil spills, or microbes for military use that can damage roads, weapons, vehicles, fuel, anti-radar coatings, and bullet-proof vests.

We could also include mammals cloned in the course of scientific research, like Dolly the celebrity sheep, or transgenic animals such as the spider-goat, a transgenic goat that produces spider webs, or the 'oncomouse', a mouse with cancer for medical research. Biotechnological stockbreeding produces chickens with more meat while the transgenic salmon grows faster. And, of course, genetic engineering is applied to domestic pets: brightly coloured goldfish and cats that do not cause allergies. All of these technologies are patented and registered by the private companies that exploit them commercially.

Other transgenic animals have also caused a great stir, such as artist Eduardo Kac's fluorescent rabbit Alba, created with the 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 the life of a 'pet'. The artwork was

not in creating Alba, but in the act of bringing the whole process to light in order to attract public attention to the debate on genetically modified organisms (Kac, 2005). In fact,

Alba was not created for cancer research or any other kind of medical research, which was why it was seen as ‘decadent’, meaning decorative. The discussion about this ‘decadent art’ is often dominated by the arguments of multinational companies, science laboratories, and experts. They usually claim that there are no ethical issues involved as no one gets 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 the worries of business, that have to focus in short term profits. (Tomasula, 2002, p. 137)

Art, Nature, and Culture

The very separation between nature and culture is an abstraction that has had real consequences in the way we treat and change nature. This system also generates the possibility of creating a hierarchy that devalues some elements while valuing others. By separating man from nature, we enable the creation of an anthropocentric view that considers all that is outside the human system as secondary.

Artists are increasingly operating as mediators, translators and creators of ideas that do not necessarily respect the boundaries between art, science, and technology. In this way, they contribute to the expansion of the concept of art itself and strengthen relations between the three areas. The loss of epistemological confidence in science coincides with an increase in popular knowledge, primarily through what is reported in the media. On one hand, we have the plurality of epistemologies or the emergence of “epistemologies of plurality” (Santos 2007, 243–244) which occur concomitantly with the increase of the discourse in defence of individual and social identities, caused both by the fears of terrorist attacks and the need to market a culture and territories. Thus, the discourse of plurality in culture (and art) is of great relevance. It is where contradictory views can be challenged and unique beliefs and the mechanisms of dogmatic rhetoric may be exposed.

Artists often reveal these ideologies, these visions of the world, almost hidden in scientific discourse under a layer of objectivity. Flusser also has confronted these two views in his works on reality and fiction:

Consider Newton’s famous phrase: *hypotheses non fingo* (my hypotheses are not inventions). In contrast, consider the words of Wittgenstein: Science discovers nothing, it invents it. The contradiction between the

two statements reveals a profound change in our concept of reality and fiction, discovery, and invention. In effect, it reveals the loss of faith in the established and discovered reality, placing in a fiction invented by ourselves. (Flusser, 2010)

The problem of the polarity of views can limit the development of work in art and biology. Some reject this type of knowledge, considering it beyond the interests of culture, others simply replicate what is already done in science, often without a critical discourse.

Eugene Thacker (2006) called attention to the risk in the responsive use of technology by artists, that seeks the latest fashions and scientific discoveries that may cause the artwork to be used as mere tool, promoting the biotechnology industry itself. He also points to the risk of the prefix 'bio' becoming another 'cyber', a prefix that can be applied universally, thus losing any specific meaning. Curiously (also observed by Thacker), the prefix 'bio', used in words such as bioterrorism, biofuels, bioweapons, biopharmaceuticals, incorporates the concept of basic elements in technopolitical life. It also creates the possibility of a concept of external life adaptable to whatever it is, a life without substance, and a concept of potential life suitable for different uses and practices.

However, in addition to providing a meta-critical discourse, art also works directly with scientific discoveries. For Louis Bec, experimental art practices are a rare transformational agent, a transducer technology between modes of expression and communication considered antagonistic. They become new dimensions between artificial probes and digital media worlds. The ability to test the limits of mental feasibility and physiological research has evolved into real artistic practice.

To understand the worlds of different species is to broaden our concept of the world and think more clearly about all possible realities. In addition, it enables the expansion of a usually anthropocentric vision of art. Bec proposes that we should question our range of perception of reality by extending the codes and modes of communication and understanding how other species are reported beyond dichotomies between 'identity' and 'alterity', that directly touch on issues related to biotechnology and the fear of bioterrorism (Bec, 2009, p. 462). Behind it is the fear of the unknown, faceless enemies represented by viruses and bacteria. Susan Sontag mentioned that when a micro-organism is found, the war metaphors gain strength, generating aggressive strategies of 'defence'. There is a direct relationship between the imagery of pollution and the invasion by what seems strange to us, by the 'other'.

It is no coincidence that the threats of bioterrorism have this double factor, contamination and death caused by invisible agents whose origin we do not know and that might come and attack us in our own home. According to Sontag, "The authoritarian political ideologies have an interest in promoting fear through the idea that aliens are ready to take over" (Sontag, 1989, p. 74).

Thus, individual freedom can be replaced with a (false) promise of peace on the part of political power. The idea of stability, of either an individual or a group, is utopian, but it is also reassuring. As Julia Kristeva suggests, “The discomfort caused by the other is because the alien is in ourselves, the instability is inherent in everyone” (1988, p.47).

Rather than being potentially polluting and corrosive, the figure of the stranger is a threat because it acts as a mirror that moves us away from what Freud had already identified as the ‘lost self’, which is imagined as independent and harmonious. Art applied to biology is in contact with new subjectivities, new forms of life, and it creates languages and modes of expression that highlight the problems behind the specifics of the biotechnological tools, generated by fear or ignorance, or by an admiration connected with mythological and ancient beliefs. Furthermore, artists who work with the concept of ecology have projects that offer opportunities for a change of attitude based on concepts of an alternative lifestyle, economics of biological resources, and sustainable consumption.

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 contextualizing them in aesthetic form, artists are treading the boundaries between nature and art, just as they contribute to the generation of a 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 they are seen as transgressing the sacred boundaries between the natural and artificial worlds, biology and technology, divine creation and industrial artefacts. Biotechnology industries are suspected of generating deep-rooted problems by detecting a gene, creating a pill, and selling a formula that governs everything. But it is a problem in epistemological and ontological terms, not just economic ones.

On the other hand, a supposedly apolitical aesthetics aimed at fuelling the cultural innovations market, where it is possible to soothe public scepticism by separating it from the biopolitical debate attached to these practices, and by promoting it in the aesthetic bunker, can help to educate the public, while indirectly functioning as an excellent public relations exercise that paves the way for future marketing campaigns for new biotechnology products considered necessary and unavoidable (Critical Art Ensemble, 2002).

Another crucial element here is the differentiation between various bioart 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 that are part of moral discourses. These discourses are implicit, and they must be made explicit.

As if 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 wholly transformed. From now on, barriers will have less to do with science than with legal and political issues around experimentation with living beings. The 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 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 (Thacker, 2006). But the fact that molecular biology, through biotechnologies working with IT, reduces life to genetic information obtained from the molecule of life, from DNA to the 21st century version of the Holy Grail, is not exempt from political, economic, and social implications that we must help to shed light on.

Every sociohistorical context has its own way of conceiving and confronting life. Technoscience is not just neutral knowledge of reality; it is 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 (Keller, 1996, p. 20), 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” (Deleuze, 1987, p. 24).

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, is by virtue of a position within a privileged observation point, which is science. This mythical objective point, cut off from its own context, 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 (Mendiola, 2006, p. 75).

For several decades, the sociology of scientific knowledge has tried to show 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 (Haraway, 1995, p. 326) that will allow us to show the situational, contingent, and heterogeneous nature of all scientific practice.

It would be an appeal to a located knowledge, such as the “amateur discursiveness” proposed by artists’ collective Critical Art Ensemble that refers to a different perspective around transgenic debates, allowing citizens to participate to the discussion at certain

levels. It should not be that individuals are left with the implied obligation to have faith in scientific, government, and corporate authorities that allegedly act with the public interest in mind (Critical Art Ensemble, 2002, p. 6).

As genomes, enzymes, and all kinds of biochemical processes are privatized, a pancapitalist policy expands, which only serves to strengthen and extend the economic profit machine. Molecular invasion and control are quickly transformed into new kinds of colonial and endo-colonial control: the focus is on consolidating the food chain, from the molecular structure to the packaging (Critical Art Ensemble, 2002, p. 4).

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 (Critical Art Ensemble 1998, p. 6). In response to this, there is a strong ecologic 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.

Life Between Reality and Discourse

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 have to be explained (Latour, 2004). So we have to understand that biology is a discourse—not the natural 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 as organized.

Thus, we have to find a way of relating to nature that is not based on reification or ownership, abandoning this parasitical relationship Foucault described in his works on the change from natural history to the birth of modern biology (Foucault, 1997, p.12). In Donna Haraway's words, "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 (1999, p. 122).

In biotechnologies, the part (the gene) designates the whole (life). And this implies that the information is 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: eighteenth century natural history from

which life takes leave (timeless botanical gardens full of taxonomies); nineteenth century evolutionism that turns life into history (the ecological niche, in which the organism is separated from the context); and late twentieth and early twenty-first century genetic engineering, which decontextualizes life (genetic databanks of life-information that can be manipulated and transformed) (Mendiola, 2006, p. 58).

In an attempt to express this Promethean will, which is inscribed into biotechnologized life, Eduardo Kac created the installation *Genesis* in 1999. 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. The significance is not as much in the creation of the artistic object, as 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 symbolizes 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 do not 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 geneticized life is bio-power, the result of matter and semiosis 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 sociohistoric 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'. If it is true that life has always been subject to power, the question today relates to the specific biopolitics that biotechnology contains. This is why it is interesting to turn to Foucault's concept of biopolitics and its implicit connection between two ways of articulating biological life itself (Thacker, 2006, p. 43).

In the eighteenth century, an information-based view of life control emerged. The sciences of demographics, political economy, and statistics documented births, illnesses, and deaths, quantifying life itself in a sophisticated way. The new concept of 'population' made it possible to manage and express individuals' health and made it possible for natural history, biology, and then, evolutionary biology to develop. In this way, population became a biological as well as a political issue, while currently it is turning into a genetic

issue to be controlled: biology and information technology merge perfectly for the purpose of producing bio-power.

At 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. (Public Health Security and Bioterrorism Preparedness and Response Act of 2002. Public Law, 107–188).

We are facing a biological war with a long tradition and various levels, such as biological sabotage. 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, the intentional poisoning of wells narrated in Thucydides tales of the Peloponnesian war is an early form of biological sabotage. Plagues, epidemics, fear of contagion and infection go beyond the biological and become social, cultural, and also political elements. Elements that Foucault synthesized historically in two basic reactions: one, anarchic, around the ‘dance of death’ and the other totalitarian, such as quarantine (Foucault, 2007).

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 forms of genetic warfare based on the eugenic plans of Nazi Germany, inspired by the ideas of England’s Sir Francis Galton, such as ethnic cleansing in search of a ‘pure race’ free from any element that could be considered a defect in ideal of ‘human purity’. Even in our own imagination, cloning appears as the ideal of reproduction of the best specimen, another form of cleansing and selection. And this ideology is still implicitly present in databases of genetic profiles of creative people, although the term ‘eugenics’ is no longer used anywhere as a consequence of the atrocities that have been committed under its name.

We are dealing with a politicized biology that since 9/11 has generated an endless number of biodefence laws regulating ‘life itself’. Laws that led to the FBI’s persecution, arrest, and jailing of Steve Kurtz, a founding member of the artists’ collective Critical Art Ensemble, under the accusation of bioterrorism. His crime was to look at scientific processes through the view of a capitalist political economy, displacing the legitimised version of science as something neutral and value-free. Steve Kurtz was sued and accused of bioterrorism for the simple act of using inoffensive molecular biology technologies and engaging in a critical discourse around biotechnologies.

All of this demonstrates that what is 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 biopower is that which is a form of power that regulates social life from its interior, following, interpreting, absorbing, and rearticulating it. What is directly at stake in relation to power is the production and reproduction of life itself (Hardt and Negri, 2002).

The other side of plagues and epidemics are the monsters that represent abnormality and are left out of classifications that have no place for them, even though its 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, 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 (Lykke et al., 1996). 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 begets its own monsters. In our own time, the monster is bound to emerge in the course of the path aiming to transform nature and turn it into simple matter with the serviceability of merchandise. Today, the monstrous has become banal, 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.

Chimeras, unlike monsters, are hybrids par excellence, a product of the fusion of three different animals—goat, serpent, and lion—that emerges as a recurring infernal mythological figure and 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 hybridization of a new biotechnological nature. Projects such as 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-materialize. The creation of semi-living sculptures through experimentation with live tissue generation led them to create projects such as *The Semi-Living Worry Dolls*, *Womb 2000*, where they brought 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 creation of a semi-living sculpture representing fake pig wings, in reference to the saying 'if pigs could fly', and used to express the impossibility of achieving something. Their latest project, *Disembodied Cuisine*, explores other ways of interacting with semi-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, which can stay alive, with a simple biopsy (Catts and Zurr, 2003, pp. 47–60).

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” (Margulis, 1995). 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 biotechnological life, they coexist naturally with us, producing a new nature that is not exempt from a specific biopolitics regulating and standardizing 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 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” (Deleuze, 1987, p. 122).

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