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Repositioning Biotech Arts in Mexico

Abstract: This paper examines the role played by biotech art in Mexico and the way in which it has been inscribed in the local issues. Specifically, it focuses on the first biotech art exhibition in Mexico and on the production of the installations at the National University. It emphasises the epistemological and aesthetic problems encountered during the production of the artworks and the setting up of the exhibition.
Key words: bioart, transgenic crops, biotech, corn, aesthetics
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Repozicioniranje biotehnološke umetnosti v Mehiki

Izvleček: Ta članek preučuje vlogo, ki jo biotehnološka umetnost igra v Mehiki, in način, na katerega se je vtisnila v lokalna vprašanja. Natančneje se osredotoča na prvo biotehnološko umetniško razstavo v Mehiki in na proizvodnjo instalacij na Narodni univerzi. Poudarja epistemološke in estetske probleme, na katere so naleteli med izdelavo umetnin in postavljanjem razstave.
Ključne besede: biotehnološka umetnost, transgenetične rastline, koruza, estetika

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What follows is an attempt to describe the process through which the pieces of BIOS Ex machinA (the first art collective in Mexico producing transgenic and biotechnological art[2]) were generated, in order to reflect about the exhibition that took place in 2012–2013, "Sin origen/Sin semilla"[3] (Without origin/Seedless) at the National Autonomous University of Mexico (UNAM). Describing this process will be an occasion to put forward the limits and possibilities of biotech arts, for example the challenges confronting artists, the response of museums, the possibilities of working with lab conditions in the art world, the range of topics that biotech arts can address, and how collective work is accomplished at a university which has, as an advantage, active group works in the fields of arts, technology, sciences and humanities. At the same time, the whole project represents an effort to confront the alterations of the Mexican landscape in the recent decades, reflecting the transition from traditional agriculture to industrial agriculture. We focused on the topic of maize because it has a symbolic significance for the Mexican culture, being deeply rooted in the national imagery, in the ancient myths, and in the food. Moreover, it can be thought of as an axis of a way of being, of dwelling and transforming nature and culture.

It has been a challenge for Mexico to adopt the practices of late capitalism, to change the agricultural landscape in order to cope with the competition of the USA and the Californian crops, to adopt the North American Free Trade Agreement (NAFTA), and slowly to develop an agricultural industry which does not consider the traditional crops and farming, but sees the land as something instrumental that

[2] BIOS Ex machinA was conformed in 2012 by: Marcela Armas, Axel Barceló, Arcángel Constantini, Deborah Dorotinsky, María Antonia González Valerio, Marco Antonio Lara, Jorge Enrique Linares, Sebastián Lomelí, Juan Carlos Martínez, Rosaura Martínez, Lena Ortega y Luisa Valender.
[3] For further information about the exhibition, see González Valerio, 2016..

can be exploited for economic gain and growth. Although the issue might seem two-sided, an opposition between traditional crops and a capitalist agriculture that follows the neoliberalist rules of the market, it is of course more complex than that. It involves the recent history of Mexico and the outcome of the Mexican Revolution regarding the land and the city (specifically Mexico City) as the two options for economic growth in the second half of the twentieth century.

The Mexican land was severely impoverished after the Mexican Revolution (1910–1921), and the whole country was in an economic and political crisis. The centre of economic development was Mexico City, which grew enormously in the next decades, representing the possibility of a new life, after the land was more or less abandoned and the reforms on agricultural laws ended up many times leaving people with land ownership but with no means to cultivate it.

The Green Revolution changed things dramatically, starting in the north of Mexico in the 1940s with the introduction of improved wheat, beans, potatoes and maize by Norman Borlaug, who later won the Nobel Peace Prize for introducing many of the improved seeds in Mexico to Asia and helping reduce famine there.

The biodiversity of Mexico and its varied climate conditions made it a perfect spot to experiment with new projects of agriculture and to create a seed bank, which goes back to the 40s and nowadays contains the largest maize seed collection in the world. The project was sponsored by the Rockefeller Foundation and was later established as the International Maize and Wheat Improvement Centre (CIMMYT-Centro Internacional de Mejoramiento de Maíz y Trigo[4]). They realised very soon the importance of seeds as a biotech product, as an epistemic artefact and as a way of controlling knowledge and agricultural development.

[4] See http://www.cimmyt.org/.

The very existence of seed banks and the research on improved seeds of maize and wheat, among others, in Mexico even before the end of the Second World War make us consider to what extent biopolitics are involved in the construction of our contemporary world as a crossroads of science, technology, neoliberalism, late capitalism, territory, fast transformations of the environment, and our relation to the land. The fact that the South of Mexico, where many indigenous people preserve their traditional crops, still resists the introduction of agroindustry prompts us to start thinking about all that is at stake in the transformation of agricultural practices.

The CIMMYT is likewise investigating the production of transgenic seeds. In collaboration with Monsanto, they launched transgenic maize (maize Bt) in Kenya in 2016. Although transgenic maize is still forbidden in Mexico because of the many protests and movements by activists, scientists and artists, Monsanto continues to try and introduce GMO's with the support of the Mexican Federal Government.

Recently the CIMMYT has received financial support from Bill Gates and Carlos Slim, two of the richest people in the world, who are well aware of the importance of the seeds for the near future.

From this scenario, how to produce art in the intersection of biotechnology? How to deal with some of the broad issues that are involved in the era of technoscience? With these questions in mind, the collective BIOS Ex machinA started its quest in order to produce the first exhibition in Mexico of transgenic and biotechnological art.

The primary question that we had to answer before becoming BIOS Ex machinA was how to invent a collective that would reunite artists, scholars and scientists to produce biotech arts.

At the very beginning we got together planning to produce biotech art. We needed to call on those who could be interested

in our intention and ideas. And then we knocked on some doors. But how does one knock on doors with the intent of producing "biotech art", to intervene and manipulate living organisms? How is this to be done?

We formed an initial group and a seminar, assembled a library of basic texts, and began studying. Ideas came up during the seminar: we discussed them and kept reading. We dove into some pretty confusing depths. But there was a lot going on and we were in well over our heads. Luckily, our enthusiasm was overwhelming as well. A good part of the collective group was made up of scholars from UNAM, and because of this, most of the theoretical and research work with and on the texts proceeded quite naturally. The enthusiasm to turn and redirect or, more accurately, to invent new research lines was equally buoyant.

We had a lot of questions. Above all, we studied biology texts on transgenic modifications in maize, for example. We added these readings to reflections on aesthetics and biotechnological arts. Discussion points were never scarce. We were slowly beginning to understand the discourses that had come into being surrounding these topics. Perhaps the most important case was maize, and our growing involvement with themes that had at first seemed foreign to us, for our focus in the discussions was of a more ontological order, permeated with very abstract concepts. Another important point that determined what we were going to produce was politics and the political commitment of art. Bio-politics could not be translated into a mere slogan or manifesto.

The issue of maize had been previously addressed in Mexico with a very strong political charge by visual and plastic artists who repudiated transgenic maize and mobilised all over our Republic to denounce the practices of transnational corporations and political parties.

Our immersion into the topic was marked by scepticism and radical doubt about transgenic maize and its condemnation. We held a position of uncertainty. We were studying texts which were in its favour and texts which were against it,[5] until we took our stand, which depended in good measure on the people we encountered on our way.

One of the first doors we knocked on happened to be Elena Álvarez-Buylla's at the Ecology Institute of UNAM. One thing led to another, and all of a sudden we were in the molecular genetic lab trying to uphold the importance of biotech art and to convince her to collaborate with us.

The Laboratory for Plant Molecular Genetics, Development and Evolution was studying the model organism *Arabidopsis thaliana*, and Elena's team was dedicating part of its work to this. She took us to the greenhouses where rows of genetically modified *Arabidopsis* were growing, and explained what her experiments consisted of. There we asked her if we could work with *Arabidopsis* and create a genetically modified plant expressly for our project. To our surprise she agreed. We sealed the deal.

Naturally, what followed was a thorough investigation of what this minute plant called *Arabidopsis thaliana* was, and how the

[5] Paradigmatic texts in its favour include: Carlos Blanco 2008. Here we find a profusion of data on the positive impact of transgenic modifications; indeed, Blanco even affirms that "It is desirable for developing countries, especially Latin American ones, to adopt strategies that allow them to take advantage of the benefits of transgenic crops so as to reduce their food dependence on bigger economies", 46. Conversely, texts like *Haciendo milpa* (México, UNAM, 2011), coordinated by Elena Álvarez-Buylla, and *Origen y diversificación del maíz* (México, UNAM, 2009), coordinated by T.A. Kato et al., stress the importance of biodiversity, of the recognition and conservation of traditional knowledge of maize, in order to preserve the varieties that have developed in Mexico.

website that gathered all the information obtained from labs around the world worked.[6] I signed up on the website, requested information, and they sent me genetic sequences with the warning that their distribution was strictly forbidden. It was evident that I could not understand anything and did not know what to do with these sequences. But I was surprised by how easy it was to gain access to this kind of information, to databases and the software.

My academic credentials were sufficient for me to register on these websites. Indeed, I even registered as a laboratory in an attempt to buy a part of the international stock of modified *Arabidopsis* seeds and pay for them with my credit card. Fortunately, before doing so, I asked some colleagues from the Faculty of Sciences if it was feasible to receive such material. They warned me that Mexican customs officers were so corrupt that they had let biological material die or decompose on many previous occasions, and thus it was pointless to buy anything: the customs officers would keep everything, even animals, they insisted.

Access to information without the proper tools to interpret it is completely worthless. The obtained genetic sequences are undecipherable and useless if you do not know what to do with them. We were very far from knowing what to do. Anything that involved transferring this genetic information into another realm, be it sound or illumination, seemed to us completely ridiculous.

We had the project of an immersive installation to build with *Arabidopsis*. We chose the mutant *Arabidopsis agamous* with a reporting GUS gene because it produced a blue super flower, and that allowed us to play with the classical canon of beauty (a super flower

[6] Results of genetic interventions are published on this website. The study of the genome of this plant turned into an epistemic artefact is the result of a collective international effort in which even Monsanto is involved. www.arabidopsis.org.

would be maximally beautiful). To this we added blue dye, water, dystopian imaginaries produced by biotechnology, the production of a dislocated space … and the piece *Accumulated transparence. Arabidopsis AG:GUS (Yes, it is blue! It has to be blue! A coagulated blue in the offing)* began to take shape in our minds. Moreover, we had the idea of a 3D printer mounted on a tractor that would print seeds out of a biopolymer PLA moving in a radial space: this would become *Polymer "milpa"*. We decided to build an installation that would allow a live experience of detecting transgenic maize contamination on the basis of its resistance to glyphosate, a wide-spectrum herbicide. The installation had the name: *They will be ashes, but will make sense (Slightly toxic)*. And the project of a documentary film about transgenic maize: *Cross-pollination*.

When we finally worked out the projects for four pieces, we only needed to bring them about and find a way of doing so, for we were starting on a road never trodden before. The most important part was to have complete and multidisciplinary teams that could create these pieces. This was no easy task.

For *Polymer "milpa"*, not only did we have to get our hands on a 3D printer, but we also had to find engineers and designers that would help with the programming and assembly. To build this robot was not easy at all, and only minutes before opening the doors of the museum did it finally work! The arm spun around moving the tractor, which left its tracks in the soil contained in the circular ring that marked the radial space, and the printer produced little 3D modelled seeds, based on the samples we had collected for another piece. In a slow, seemingly fragile movement the injectors pushed PLA out in seed shapes, which fell on the soil. The biopolymer cartridge was spinning and through the four giant speakers one could hear the audio from Monsanto's stock exchange that had been recorded for three months. People were going around taking the

seeds – some unnoticed, some not. This continued throughout the two months that the exhibition lasted. The seeds became plastic monuments to recall the acting power of biotechnology.

The documentary film that would give place to *Cross-Pollination* was a research on maize, biotechnology and transgenic modifications: the parties involved in the debate, the political and economic positions, and the artists who had taken a stance. The film had two screenings, one at Museo Universitario Arte Contemporáneo (MUAC) and the other at Museo Universitario de Ciencias y Artes (MUCA Roma). The videos were edited in a different manner for each setting. The documentary became an actual testimony to the power of words to speak truth and lies.

When *Accumulated transparence* began to take shape in our minds, we had no idea how incredibly complicated it was going to be to create that piece, or the number of people who would have to be involved in the process, or the amount of money we were going to spend. We thought of water, of blue dye, of the transgenic plant, of the immersive installation, and of an aesthetic experience that would surpass the "classical" limits of the effect on the spectator. We thought of creating a hybrid in which the limits of art, science, and philosophy would be broken through, leading to a dislocated space.

The first practical and technical challenge was to build a pool inside MUCA Roma, for the museum is located inside a Porfirian house[7] that crumbles a little more with each earthquake. The next step was the visualising device. To try to decide between acrylics, crystals, mirrors, metals, in order to build that visualisation device, the box in which we would have to reproduce the laboratory condi-

[7] A house built during the dictatorship of Porfirio Díaz at the turn of the 20th century in French Baroque style.

tions for plants to survive and in which we would have to create a game of mirrors, visions, reflections, objects, plants, breaths.

The task of the artist as producer consisted only of deciding. We were not involved in the manufacturing, the forging of the metals, or the polishing of the mirrors. We didn't even know the names of the hammers and silicone that were shaping the materials. Who is the creator/producer here? Is there in fact a "who"? How to continue with this questioning if the very act of creating is dissolved into things, people, processes, instructions? There is no solitary artist masterfully crafting the wood with his hands or sculpting the stone. There is no solitude. There is – indeed, without a doubt and with unparallelled strength – a community of voices in which it is useless to ask who is speaking or who this discourse can be attributed to. Moreover, one would have to enter these voices, intercept them, throw some of them back, and witness how all of this was coming to be, letting oneself be driven by this whole process with a joyful smile. A primary self-surrender and then yielding to forces without trying to direct, without turning multiplicities into a course directed towards a previously defined and fixed goal.

What needed to be built now was a visualisation device with web cameras that would be inside Elena's laboratory, streaming the growth of these plants live. In the museum we would showcase the mutant *agamous*. The transmission of the image in real time was yet another complication of this piece – another nut to crack, as we may say. The next nut was the piece's audio track. The audio was finally set up when everything was full of water, and it began sounding through all the hidden speakers behind the black background that served as the room ceiling. Enwrapping anguish. The last nut was the actresses. They had to act as scientists, with white lab coats and blue glasses, to direct the public and create a biohazard environment. An arsenal of mouth covers, gloves, blue surgeon slippers

and lab coats had to protect the spectators, who would face, probably for the first time in their lives, genetically modified organisms, biological mutants created inside a laboratory.

Actresses played their part convincingly. In fact the piece had absolutely no biohazard risk. The intention was to play with the dystopian imaginaries that biotechnology produces, to create a crossroads between science fiction and the questioning of the sometimes invisible borders between "nature" and "artificiality". Many people thought and acted as if they were truly submitting themselves to a space controlled for security reasons and labelled with the international symbol of "biohazard". Then it became real (some even ran away from the waiting room or asked for protection for the children). As the weeks went by, the *Arabidopsis* girls, as we called them, amplified their discourse. The presence of these actresses allowed, in such a way, to transmit the information that people would hope to obtain from a scientific experiment. That was, however, no scientific experiment. Nor was it something that could be contemplated aesthetically. Its elusive character was manifested as such, moving the territories of the expectations of meaning.

They will be ashes changed our previous conceptions of maize, the debate on transgenics and its cultural significance. As I had mentioned, we were unwilling either to create ideological art or to position ourselves for or against the issue. Knocking on more random doors, I found Margarita Tadeo, an agronomer at FES-Cuautitlán, a campus of UNAM, with a long and important work career on maize.

We had a large stock of seed samples, which had been collected by the team here and there. I planted them so that they would keep growing until it was time to begin their annihilation process. The life-death bond proper to this whole piece was beginning to emerge tensely. After having taken care of the seeds and then the plants for weeks, I had to kill them. I prepared a solution of glyphosate-water,

covered myself up as much as possible, took these plants to the roof and sprinkled them (with the camera in one hand and the sprinkler in the other). A week later I sprinkled them again. With the passing of days, all but one began to die. In a few weeks all plants were withered except one, which insisted on living. It came from a warehouse in the state of Guanajuato that sold foraging maize. We ran some Elisa tests on the maize to confirm that it was transgenic. I left the plant at home so that it would slowly wither, and then we exhibited it in the museum.

For the installation at MUAC, we repeated the experiment that I had already carried out at home. The seed samples were again our own, expanded in the following months with an enormous stock from Guerrero and Veracruz, kindly given to us by Margarita Tadeo.

We had a performance every week at the museum, sprinkling the seeds with glyphosate. The installation was aesthetically successful. We had been working to design the furniture containing the plant pots, striving towards an aesthetic that was not exactly laboratory-like, but also not completely like a garden or a greenhouse. One could actually go plowing about through the piece as if it were a "milpa", and in order to go through the entrance one had to cross a sign on the floor where one could read "slightly toxic", the letters drawn with the ashes of the burnt plants.

For the time being, our experience was the successful detection of transgenic maize in Guanajuato and the experience of trying to conduct an experiment in museum conditions rather than laboratory conditions.

BIOS Ex machinA was basically about reducing the quest for the "who" and witnessing the frenetic movements. It was about bringing the living into being from a producing (desiring) machine (device) and executing an immanent thought that searched for what was there (beyond matter, and before transcendence). The machine

produced everything, from the very name of the collective group to the last comma of the texts. That was the experience: to be many and to produce the multiple in a realm of indefiniteness, indecision (what is it that is there, what is it that is?). This experience prompted some necessary questions: What does it mean to create, to produce? What does it mean to think?

BIOS Ex machinA is a machinery that still needs some fine tuning and will probably always be in the process of tuning (itself). This was its first presentation: the course of its development was set by chance, uncertainty and drift. Instead of chance, we should say forces.

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