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Exhibiting Irritations:
experimenting inside art and science

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Abstract

This thesis is a methodological and interpretative experiment on the crossings between art and science as exhibited in *Inside: Art and Science*, a public art exhibition that happened in Lisbon's Cordaria in the end of 2009. By taking irritations around Art and Science as a privileged point of analysis, this text aims to produce a comprehension on the terms at which those artworks affected people there. In order to do that, observation, interviews and drawing exercises next to the visitors were conducted, as well as bibliographic surveys on the artists' involved. The text follows a tripartite structure: the introductory chapters, in which the aesthetic-motivated crossings between art and science are contextualized, with especial emphasis on its recent history and contemporary character; the descriptive section, which reconstructs the experience of *Inside* through images, interviews' excerpts, and other instruments; and the analytical, that aims to create comprehensions on the the previous material by reworking it conceptually and essayistically. Given that a great part of the artists at *Inside* shared the ambition of raising public awareness towards scientific knowledge and techniques while contributing to the emergence of a new art at the same time, this text looks critically at the possibility of thinking of artistic practice as a problematizing activity as well as to the interviewees' lack of commitment regarding the ethical and political dimensions of Art and Science, pointing out a particular discursive use of future and a highly idealized notion of nature as factors of distancing and alienation.

Keywords: art; future; irritation; nature; problematization; science.

Resumo

Esta tese representa uma experiência metodológica e interpretativa sobre os cruzamentos entre arte e ciência exibidos na exposição *Inside: Arte e Ciência*, que decorreu na Cordoaria de Lisboa no final de 2009. Tomando as “irritações” em torno da Arte e Ciência como pontos de análise privilegiados, o objectivo deste texto é produzir uma compreensão sobre os termos em que os objectos de arte aí exibidos afectaram os visitantes. Para isso, foram realizadas observações, entrevistas e exercícios espaciais junto destes, assim como revisões de literatura sobre os artistas envolvidos. A estrutura do texto é tripartida: os capítulos introdutórios, que contextualizam os cruzamentos entre arte e ciência a serem tratados aqui, com especial ênfase na sua história recente e carácter contemporâneo; a secção descritiva, que reconstrói a experiência da *Inside* através de imagens, excertos de entrevistas e outros instrumentos; e a analítica, que se propõe a produzir compreensões sobre os dados apresentados, retrabalhando-os conceptualmente e essaisticamente. Dado que grande parte dos artistas da *Inside* ambicionavam a sensibilizar o público para os conhecimentos e técnicas científicas ao mesmo tempo que contribuía para a emergência duma nova arte, este texto analisa criticamente a possibilidade de entender a prática artística como uma actividade de problematização, assim como a ausência de compromisso dos entrevistados em relação às implicações éticas e políticas da Arte e Ciência, sugerindo que um determinado uso discursivo da ideia de futuro e uma noção altamente idealizada de natureza possam ter estado na origem deste distanciamento e alienação.

Palavras-chave: arte; ciência; futuro; irritação; natureza; problematização.

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Images

[front] Self-made photo collage of *Inside's* pictures.

1. Exhibition plan with artists' names (scanned from *Inside's* free guide).
2. Some of the artworks displayed at *Inside's* first floor. Clockwise from top left: "Historical Machines" by Bill Vorn (my photo); "Ear on Arm" by Stelarc (*Inside*, 2009) ; "flw" by Ken Goldberg (*Inside*, 2009); "Pig Wings" by Oron Catts and Ionat Zurr (*TC&A*, 2009); "Natural History of the Enigma" by Eduardo Kac (Moura, 2009); "Culturing Life" by Suzanne Anker (Moura, 2009); "Roots" by Roman Kirschner (my photo); and "Junior Return" by Philip Ross (my photo).
3. Some of the artworks displayed at *Inside's* second floor. Clockwise from top left: "Op_era: Sonic Dimension" by Rejane Cantoni and Daniela Kutschat (my photo); "Cocoon" by Kathleen Rogers (my photo); "Self-hybridations" by ORLAN (*Inside*, 2009); letters drawn by "ISU" by Leonel Moura (my photo); "Genetic Engineered Mice" by Catherine Chalmers (Moura, 2009); "Morphoteques" by Driessens and Verstappen (my photo); "RAP" by Leonel Moura (my photo); "Fractal Flowers" by Miguel Chevalier (my photo).
4. Twenty-five spatial exercises overlapped.
5. "The Art of the 21st Century", large poster at the reception counter (my photo).

Overture

Art and Science: notes on context, distinctiveness, and contemporariness

Sculptures of geometric babies, a projection of endlessly generated fractal flowers, photos of genetic engineered mice, a silicon almost-nano copy of Frank Lloyd's Wright Fallingwater House, a flower with human DNA, chemical reactions alluding to a Persian myth, a synthetic protein whose sequence of amino acids completes a name, a painting robot, digital transformations of one's face in order to match different patterns of beauty, an illuminated machine with unpredictable movements, a close-up film of zebrafish embryos, an extra ear implanted onto arm, big dysfunctional spider looking robots, pig bone tissue grew in wing shape.

What do these have in common?

My master's thesis draws on a case study conducted a little more than a year ago, in a public art exhibition dedicated to the theme of Art and Science in Lisbon, Portugal. *Inside: Art and Science (Inside: Arte e Ciência)* was a remarkable two-month event if we think of what usually makes the Portuguese art scene. The above-mentioned objects are some of the ones presented there¹. They had a motto in common: to artistically explore scientific knowledge and techniques using variable media.

Until September 2009, Portugal had never had a collective Art and Science expo like this one. Surely there had been some smaller exhibitions before by particular artists and art galleries (Galeria António Prates, 2005; Menezes; Urbano, 2009; Moura, 2007); yet, this was the first time that twenty-two international "Art and Science" artists were brought together, some of them very emblematic – ORLAN, Eduardo Kac, Stelarc –, under such an apparatus: with public and private sponsors, considerable advertisement with strong design, a famous host gallery, weekly conferences by an assortment of artists and scientists, broad target audience promoted through free entrance and optional guided tours. Later I was to hear someone from the staff calling *Inside* "the most successful event in Cordoaria's recent history". The visitors' total topped five thousand, including school trips.

¹ By Suzanne Anker, Miguel Chevalier, Catherine Chalmers, Ken Goldberg, Eduardo Kac, Roman Kirschner, Marta de Menezes, Leonel Moura, ORLAN, Carl Pisaturo, Kathleen Rogers, Stelarc, Bill Vorn, and Oron Catts & Ionat Zurr, respectively.

This whole apparatus cannot be understood without recalling that 2009 was the European Year of Creativity and Innovation of which the robotic artist Leonel Moura, *Inside*'s curator, was the nominated Portuguese ambassador. The title surely helped Leonel organizing the exhibition, especially in getting institutional support. Despite these particular circumstances, I would like to point out other broader qualities of *Inside* by looking at some relevant late twentieth-century events.

Inside could have happened almost anywhere today. The crossings between art and science are part of what is usually called new media arts, a set of art practices born within the sixties' american technopastoral cultural scene (Berman, 1982) and popularized a little all over the world since then. One of the greatest and most desired festivals on this theme was founded in 1979: the Austrian *Ars Electronica*, an annual event dedicated to art, technology and society. The majority of the artists presented in *Inside* are familiar with this fest. Actually, these are commuting figures, always going from one place to another in order to show their work – USA, United Kingdom, Netherlands, Austria, and Australia, especially². These artists are also used to traveling for artistic residencies and some of them even to lecture in universities. From what I have seen lately, the opportunities to work in the field have been steadily increasing. There are definitely more academic programs, fellowships, exhibitions, artistic residencies, and research initiatives on the crossings between art and science than there were two or three years ago. But how did this reality come to be? How was it made possible?

1. Cognitive and Material Landscapes of Art and Science

The twentieth century is the historical stage for a new relationship with technoscience. As humans, we have been shaping the world through technology since ever – we were even *habilis* before *sapiens*. However, the eighteenth and the nineteenth centuries were times of truly scientific and technological revolution with deep and wide implications. The rationality of modern science – or a particular way of calculating risks and benefits, pros and cons, fed by idea[l]s of quantitateness and control (Lewontin, 1984; Weber, 2001) – is now recognized to have been extended to other dimensions of the social, namely to governance

² Information according to their online curricula. These places coincide either with hosting places – festivals or galleries – or artist residency programs dedicated to art&science explorations. Some examples: *Ars Electronica* (Austria), Museum of Modern Art and Museum of Natural History (NY, USA), Centraal Museum (Netherlands), Lawrence Wilson Art Gallery and SymbioticA's Residency Program (Australia), Birmingham Museum and Art Gallery (UK).

(Foucault, 1994a). It took us almost two hundred years to start comprehending these processes of rationalization of society and to develop a critical awareness of modernity in this regard. So there must be something about the twentieth century for this to be happening now.

Back in the 30s, Ludwik Fleck – Thomas Kuhn’s male muse – stressed the importance of history-dependent predispositions in the process of building and accepting conjectures and explanations (Fleck, 1981). Ironically, Fleck’s argument was too original for his time. He anticipated the whole agenda of Critical Epistemology by considering the scientific enterprise in terms of collective efforts dependent on specific ways of thinking (*thought collectives* and their *thought styles*, his terms). But it was only in the post-war period that these arguments were to be taken seriously. The World War II marks the shift in the relationship to technoscience that I was discussing. The atrocities committed in the name of science – an eugenetically justified genocide, secret human experimentation, massive investment in military technology, the development of the atomic bomb from an apparently innocuous physical theory – awakened critical conscience regarding the notion of scientific truth. The 50s social environment is made of disappointment and skepticism. Soon authors are to rediscover Nietzsche’s strange honesty and the Saussure’s conventionality, which are reworked and incorporated in their comprehension of reality (MacIntyre, 2007). Though the intellectual history of the second half of the twentieth century is long and complex, the absence of “positive terms” (Saussure, 1986) seems to be a shared presumption, particularly after Structuralism and Neo-Marxism. As everything appears relative, a game of differences, single truths and solutions are pulverized, and so are the means to legitimize particular goodnesses and beautifulneses. It gets hard to find something worth fighting for within the post-modern paradigm. The task of denunciation replaces remediation, because no criteria for change is completely right or innocent. Relativism curbs critique. And yet, on the other hand, this same intellectual attitude also opened up room for a new relation with sciences and theirs truths, a relation that is generative in its own way.

A new sense of the word *politics* came into being by the same half a century. Michel Foucault is the leading figure in popularizing such a view. Once detached from a corroborating reality – at least from a positivist one-to-one depiction –, truth, via speech, becomes a matter of power relations (Foucault, 1994b). In the field of competing ideas, some arguments seem to have more power than others. Expertise has its part ensuring such a power. Foucault devotes a lot of his work explaining how this sense of politics [of truth] is related to modern Human

Sciences emergence, back in the ninetieth century³. Scholars of Science and Technology Studies are the heirs of this panorama. And so are artists. To answer the question of why Art and Science is happening now the way it is, of how this reality came to be or was made possible today, here is our first hint: that it was enabled by a new way of appreciating scientific progress and truth that does not take it as univocal, indisputable, and/or essential.

Concurrently, in the last sixty years the ever amplifying daily presence of science and technology has been reshaping routines, human relations, and institutions⁴. Transportation, communication, medicine, food, economics ... we know more or less the story. Among these, some technological developments remarkably changed the conditions of possibility of human action. To be precise, I am thinking of the ones related to the biotechnosciences boost and to the very emergence of a biotechnology industry⁵. Commenting on Foucault's *epistemes*, Gilles Deleuze raised this point by asking what's next. What can come after the gauge of god and man of the classic and modern epistemes (Deleuze, 2006)? Render unto each historical formation its shaping forces and perhaps the future will be about what Deleuze calls *the unlimited finity*. *Unlimited finity* is Deleuze's invented force enabled by certain contemporary technoscientific knowledge, like these from Informatics or Molecular Biology – “in which a finite number of components yields a practically unlimited diversity of combinations” (Ibid.: 109) –, that can possibly become existential groundwork in the future. Consider the variety of consequences the kind of remarkable technological developments I mentioned can have. Will society become post-disciplinary? Will our modern schooling, vigilant and corrective control mechanisms turn projective and preventive via genetics (Rabinow, 1996)? However interesting this may be, these interrogations tell us more about the present than the future. They tell us that we *problematize*, that we are worried about this and that particular aspects. So we think, so we write, so we train experts and establish ethics committees, like a new white man's burden. We also create art. Here is a second hint to point out concerning Art and

3 One very clarifying example can be found in *History of Sexuality I: The Will to Knowledge* (Foucault, 1994a). There, Foucault sketches an exciting Victorian sexuality, stating that once sexual behavior became an object of knowledge, as it did, we didn't move from freedom to repression, we actually approved it. By highlighting the inappropriate, Victorians were able to speak about sex. And the story goes on, one must read it. Anyway, he illustrates not only the productive nature of power, but also calls into question its individual and collective dimensions (from subjectivation to biopolitics and governmentality). What we problematize, think, categorize and say determine our actions and world apprehensions.

4 Even the relation to our own body is being transformed by the hegemonic presence of science and technology. Look for Joseph Dumit's concept of “objective self fashioning” (Dumit, 2004).

5 For an historical account on the growing importance of biotechnology in our daily life and economies see Sunder Rajan's 2006 book *Biocapital: The Constitution of Postgenomic Life*.

Science emergence and present prosperity: that biotechnoscience development opened a set of new actual and potential practices about which we do care.

Thus, Art and Science explorations, as well as STS (and others could be add), resemble epiphenomena of a larger material and attitudinal reconfiguration. As Luís Quintais (2007) puts it, the growing interest on the crossings between art and science cannot be understood outside the present reflective atmosphere around the themes of science, technology and society. How to govern properly, what does it take to make an ethical political decision, what future do we want for our children, when should we use technoscience, or not, in order to achieve that, what can legitimize such a project of future... this is only a small sample of the kind of questions we could pose ourselves everyday in the face of the material changes our world has gone through. This surely shakes our very certainties of what is right and wrong to do. What have we conceded in the last decades for the sake of good life? It would not be abusive to say that a mist of worship and suspicion towards biotechnoscience seems to be part of our current endorsement of it.

Last but not least, the rising value of contemporary art is an important phenomenon of the last two decades or so. If the new relationship to truth and scientific practice and the introduction of new modes of production set ground to Art and Science to happen, it is the growing economic value and demand for it that supports its continual development and display. And these are not unilateral transformations. The growing demand for new art happens both at the level of big collectors/investors – to whom art sometimes pays more than money, particularly during times of financial crisis –, and of masses – as cultural complex goods start to be connected to leisure now that public is becoming more educated (Thompson, 2008; Thornton, 2009). These economic dynamics impregnate the art world(s) and they are part of the material landscape making new media arts prosper, including Art and Science. But wasn't there "Art and Science" before the 50s?

2. Distinctiveness of Art and Science now

Leonardo Da Vinci, Johannes Vermeer, Johann Wolfgang von Goethe, Auguste and Louis Lumière, to name a few: were not they gifted art and science makers? Did not they explore artistically the scientific knowledge and techniques of their time using variable media? Sure they did. And still, Art and Science today presents some specificities that distinguishes it from

previous crossings between the two fields of knowledge. To claim Art and Science as an emergent practice is a tricky move, perhaps even naïve or fatuous. This is because both the novelties and contiguities of it with the past and the criteria to appreciate it are highly debatable and subjective. It is almost a matter of taste, whether to emphasize the emergent or the conservative character of “Art and Science”. Notwithstanding, I repeat, there are some specificities of these artistic practices today that cannot be ignored. These have mainly to do with their relationship to scientific knowledge and techniques, including artists' political claims regarding it, but also with some particular ethical difficulties, specially at the level of BioArt practices, the spaces in which they are developed and, of course, the actual introduction of new modes of production.

The conception of art observed some serious transformations throughout the last one hundred years. Jacques Rancière (2006) explains that the current regime of art – the *aesthetic regime*, he calls it – differs from its predecessor mainly because it is no longer focused on representation. Freed from rules of doing and hierarchies of matters and genres, art became a singularity defined by a particular sensible mode. (In the process, the destruction of criteria to identify what is this singularity is a weird consequence, secondary to my concerns – to tell you whether *Inside*'s objects are art or not is not a task of mine. For my purposes, a socially sensitive definition of art will do.⁶) The lack of drive to represent is probably one of the main differences between the crossings of art with science today and those from the past. There is no aim of scientific illustration in the examples I gave in the beginning of this text. As we may recognize, illustration is one of these two domains most ancient forms of association. Nevertheless, we shall see, a great number of objects exposed in *Inside* had critical discourses on technoscience attached to them. Rather than being illustrative or complementary to the scientists' work, those objects were supposed to raise awareness and consciousness about it. Suzanne Anker commenting her own piece – the baby sculptures, named “Culturing Life”:

“Manipulating prospective characteristics inherent in eggs and sperm towards enhanced human reproduction, has become a rapidly gathering subject of multiplying moral conundrums. Akin to earlier 20th century practices in eugenics, the desire to breed a better stock of humans is once again within our extended reach. Mixing and matching, choosing and erasing, are all formal qualities associated with art and design. Will designer babies be a future product line? Will we ultimately collapse the ethical boundaries between persons and things?” (quoted from *Inside*, 2009).

6 Check Thinking From Inside, “Art and People: frame work”

Several other artists represented at *Inside: Art and Science* wrote long remarks on their work alluding to the potentialities of biotechnoscience for the exhibition catalogue (Moura, 2009). There are more words on ethics than there are on beauty, aesthetics, or even creative processes in this publication. The interests vary: artificial intelligence, genetic engineering and hybridization, body enhancement, molecular biology, animal experimentation, tissue culture, etc. Most of them have published books and articles on these themes. This intention of reflection and criticism has definitely to do with the contextualizing points I highlighted before, on the cognitive and material landscapes that inform the growing interest on new media arts. I find this kind of meta-commentary on biotechnoscience an absent feature in the oeuvres of the older artists I enumerated.

Since these new Art and Science explorations do not aspire to illustrate or assist the scientific endeavor, they tend to employ its knowledge and techniques in distinct ways too. In these new Art and Science explorations, scientific knowledge is a means to achieve aesthetic products. Artists are working collaboratively with scientists in their labs to create something, breaking into new spaces and knowledge. The past primacy of representation is thus being substituted by a relationship of appropriation. One can argue that it was the same with Goethe's Theory of Colors, without which we can't fully appreciate William Turner's work; perhaps the same for Vermeer's use of camera obscura. But the point is that they were not breaking into anything. It was not a matter of getting access to something that seemed to be unreachable before.

A good example of these new ways of employing scientific knowledge and techniques comes from BioArt, a set of artistic practices known by using living matter as medium. BioArt aesthetic experiments pose specific challenges to our habitual conception of art by virtue of drawing in relatively recent biotech developments and playing directly with living beings. As the bioartist' atelier becomes the laboratory, unexpected difficulties concerning practice are raised, such as its bureaucratic management, ethical regulation, or even the very necessity of having artists and scientists collaborating.

In a famous Lecture back in 1959, the British scientist and novelist C. P. Snow referred to sciences and humanities as "the two cultures", a catchphrase he chose to support his thesis of radical separation of the two domains due to a communication gap. While he was trying to denounce the fifties English education system failures, his arguments were largely criticized

by those who saw too much sensationalism in his polarization. But you can imagine the difficulty of bringing to terms a physicist and an anthropologist, for instance, in a fruitful exchange of knowledge. It takes years to train a physicist and an anthropologist. The high level of specialization in different language-games can really create a gap between people. To find consensus over concepts and perspectives is not easy even within disciplines (Kuhn, 1996). It happens to be the same with science and art. These two domains of practice and knowledge are usually set apart, an undeniable consequence of their “academization” and institutionalization. Generally, we think of them as leaning on different skills, and we contrast the super-rational scientist with our sensible bohemian artist stereotype. (The one thing that we usually promptly agree to be shared by these figures is creativity, but even that has been scrutinized, with some psychologists saying that may there be different types of creativity out there and that one must be careful before making assertions (Sternberg, 1999).)

Curiously, technology falls in the middle of this relationship in an ambiguous way. It’s not until the advent of modern science that the artistic sense of technology starts to weaken. *Teknologia*, its greek form, stands for "systematic treatment of an art, craft, or technique" (Harper, 2010). The artist and artisan were akin figures, masters of technique, just as thought was the wise’s adulated prime tool. Robert Lenoble places this shift in the sixteenth century Europe, right after Galileo Galilei’s experiments in Astronomy and Physics (Lenoble, 1990). With them, he says, the idea of mechanical nature was inaugurated and a whole new appraisalment of the practical experiment arose. Soon technology was to become the scientist’s means of nature manipulation and examination. *Le tabou du naturel* was broken and defeated; the days of the awe-inspiring renaissance nature were over. At the same time, the fine arts were established, away from the artisan’s role.

This gap between the realms of art and science is an obstacle that some artists are overcoming. Fortunately, they can count on the interest of some scientific institutions. Marta de Menezes – the artist with her name in a protein, literally her “Proteic Portrait” –, once told me she used to study Biology at home in order to acquire the necessary knowledge to team with scientists. Her husband is an immunologist researcher. At *Inside*, “Proteic Portrait” was displayed as an installation resembling the lab working space: a large metal table with markers, notebooks, Petri boxes, a desktop running images of Marta and collaborators working in their white coats, bright lights, and a projection of model mArta (the protein) behavior. At that time, she was running Ectopia, an art studio at Instituto Gulbenkian de

Ciência, one of the finest biomedical research sites in Portugal. According to her website, she is currently in residence at the MRC – Clinical Sciences Centre, Imperial College of Science, Technology and Medicine in London (Marta, 2003). So there is definitely a lot going on regarding art and science at the institutional level. This is an aspect that deserves attention. The number of artist residency opportunities in what used to be exclusive scientists' territory is growing. Why are universities and private companies excited about these artistic explorations? Artists surely benefit from it – everyone knows how the geometry of funding is going for research in natural sciences and humanities –, but what about scientific institutions? This topic goes beyond my objectives and acquaintance. Very superficially, I can point the reason of building a public image based on trustworthiness and social engagement. That is what happened with various US science museums and centers back in the sixties and afterwards (Macdonald, 1998); it seems to me a plausible justification. At the same time, considering the controversy around some Art and Science objects, it also seems a too narrow one, if not manichean. I leave it as an open question.

Therefore, though one cannot peremptorily argue that Art and Science is an emergent practice, or that there was nothing like aesthetically motivated crossings between the two realms before, we can surely point out some of its original features today. Knowledge, technique and space appropriation, a critical attitude towards technoscience, non-representational aesthetic explorations, plus the use of innovative media such as electronics, mechanics, software, molecules, and living beings, give Art and Science a sort of uniqueness within the History of Art. The question of whether this is reason enough to defend the rising of a new artistic paradigm, or not, does not worry me much. I recall a conversation that I once had with the artist and curator Leonel Moura, right before starting my fieldwork at *Inside* (on September 07, 2009). For him, Art and Science as it was represented at the exhibition was introducing new ways of making art and thinking about it that were not the usual means of contemporary art. The discussion went more or less superficially, but I totally remember his commitment to this perspective. On the other hand, an episode with one of my interviewees, with whom I spoke for almost two hours straight in one of Cordoaria's corner, both sitting on the cold cement stairs, is also still fresh in my mind. The forty-four years old guy, post-doc in Visual Arts, was simply mad at the idea of having something new there, as he only saw ready-made, or concept in *Inside*'s objects. This was especially for the works demanding

more scientific intervention and collaboration, as, in the end, they are signed by the artists only.

I mentioned before that Art and Science is provocative and that it raises very practical difficulties. These difficulties are likely to generate confusion, to impel us to think, to reveal blind-spots and/or to shake our presumptions about topics such as, for instance, the limits of artistic practice, or what do we want for our future in relation to the “natural world”. My thesis is an exploration of these dynamics of resistance, or of irritation, presuming that they can be interestingly revealing; it is not a discussion on the newness or antiqueness of crossing art and science to create art. Nevertheless, I will be calling it a contemporary phenomenon.

3. Contemporariness

My use of the word *contemporary* is not innocent. After sketching its conditions of possibility and its original features in the present day, I called Art and Science a contemporary social phenomenon. The word contemporary is commonly and colloquially used interchangeably with current or present. In this sense, contemporary evokes simultaneity – co-occurrence of at least two existences, which one can be our own. Though it conveys my point of stressing that Art and Science is happening now in interesting ways, enabled by a specific historical moment, I would like to propose a little more than that by using this term.

Borrowing the concept from Paul Rabinow, contemporary can also be defined as “a moving ratio of modernity, moving through the recent past and near future” (2007: 2). When applied to anthropological objects, this notion reminds us of our disciplinary problems in dealing with time and change. Traditionally, anthropologists write in what can be called the “ethnographic present”. Ethnographic present is more than a literary practice, it is analytical too. As it consists in making past descriptions in the present tense and to generalize from that, it usually treats objects as if they were timeless (Davies, 1999). Almost thirty years have passed since this critique was raised and fiercely debated for the first time, in the midst of the eighties questioning atmosphere of purposes, means and legitimacy of anthropological representation (Clifford; Marcus, 1986; Fabian, 1983). Today we are living in a post-post-ethnographic present era, with some authors discrediting the over criticism this topic has been subject to. As João de Pina-Cabral puts it, “if there is some systematicity, then there is some fixity.”, and

he goes, “Now, if sociocultural life is processual, then this fixity is only temporal. But do all things change at the same rate? No.” (2000: 344).

When studying social processes, anthropologists have to balance the perennial and ephemeral poles, or the more and less permanent, as they are frequently trying to make inferences from the last about the first. This is not an easy task; the solution is still to be found: writing in the past, self-criticism, generalization avoidance, acknowledging and moving on are some different strategies adopted. In naming Art and Science a contemporary phenomenon, I am emphasizing its root in the present and the the big question mark standing next to its stability. I do not even know if it will make sense as a concept in a couple of years, or months. For now, I have reasons to think it does: although we cannot consider this an “artistic movement”, Art and Science indeed is being used as a motto to gather people together, create art, make exhibitions, and publish books. Considering the distinctive features I mentioned above, it also shows relative coherence as an artistic practice. Maybe we are gazing at the establishing of this practice in the art world(s), as the artists appear to be gaining recognition among institutions, critics, galleries, media, and public. Anyway, its future remains unclear.

Since my fieldwork was conducted in a very particular situation during a very short period of time, I will not be always able to present the reader with descriptions of great temporal depth. How the exhibition came into being, how Leonel Moura selected the objects to be displayed there, how artists developed their works, etc: this is the kind of temporal account I cannot grant. Still, I tried to be sensitive to time and transformation in a smaller scale, within the exhibition itself. The impact of objects in people, the triggered reactions, changing moods, selected routes, disseminations of meaning mediated by objects, series, progressions, and ramified effects: these are some of the notions that inspired and helped me to be attentive to motion at *Inside: Art and Science*.

If one is aware of this temporality, the fiction of ethnographic present as a genre becomes the lesser evil. So I hope the reader remembers this sense of the word contemporary every time I use it. I hope the reader to remember that Art and Science is a mutable practice with undefined contours unfolding in time, a moving modern object of which I made a little movie, aiming to understand its actualization and relation to a wider and more permanent frame, namely the recent development of biotechnosciences.

Project Presentation

Confession and Protocol

1. A personal note on the research process

I came to know about *Inside: Art&Science* through the press, a few weeks before the opening. The exhibition was being advertised as a congregation of “22 artists that, in different ways and through a variety of media, interact with science, from biology to artificial intelligence or robotics.” (*Inside*, 2009). I had been interested in the crossings between art, science and technology for some months by then. My curiosity was ignited when I first heard about BioArt from my advisor, Luís Quintais, at that time Professor of Anthropology of Biomedicine and Biotechnologies in the Medical Anthropology Masters Program I am now completing. This artistic practice immediately caught my attention because of its associated political and ethical claims. I was intrigued by the possibility of a whole new world of aesthetic-oriented life design, a sort of apparent utopia that could take us to unforeseen places, filled with different ethos and socialities. I recall being particularly inspired by authors such as Michel Foucault (1994a), Gilles Deleuze (2006) and Paul Rabinow (1996) and their suggestions of change in peoples’ dispositions towards life and nature due to biotechnological developments. Art, after all, was playing a part on it too. So I decided to propose a case study to the curator of *Inside*, focused on these same claims. He kindly acceded. I was wondering if the public shared the artists’ critiques and thoughts about biotechnoscience. When I first thought of this thesis, I imagined it as a comparison between artists’ and public’s perspectives towards the exhibited objects via texts and interviews content analysis. In a way, I was pretty much framed by a research agenda geared towards studying the relationship between production and reception of anthropology of art and material culture (Appadurai, 1988). At that time, I intended to focus mainly on the artists’ claims of raising awareness on the possibilities of biotechnology, and animal experimentation. I asked, for instance, how would the public deal with the idea of using genetic engineering in order to create art? And if there were incitements or resistances to it, what would that mean?

My main goals and attentiveness kept subtly changing during fieldwork and afterwards as I explored new frameworks, adding complexity to my discourse on both art and science. Sometimes I overcomplicated my dissertation – ten pages, or two weeks of intensive work on social ontology and deleuzian assemblages went to trash when I realized that using it to explain how the exhibition came about would not improve my overall argument. Sometimes I took it too far too soon – hasty generalizations are always a temptation when we are eager to produce something interesting that will satisfy everyone's expectations, including mine, and justify the grants we receive. An essay of twelve pages titled “The Work of Art in the Age of Biotechnology” went also to trash because of that. It was an attempt to imagine the changes BioArt would start in artworks' temporalities, perceptions, and functions, if it became a widespread artistic practice, following what Walter Benjamin had done with film and photography back in the 1930s. After presenting it in a talk (Sousa, 2010), I realized that it was too speculative and that it will still take us a while to be able to properly appreciate BioArt in those terms, using Benjamin's very specific trio of analytical apertures. Maybe I will come back to it in the future. Maybe I will not. Though I tend to err on the side of excess, on the side of having too much to think and to say, of finding everything profoundly interesting and breathtaking in its own way, there were also times when I downplayed the value of my work. For every time I questioned its utility and purpose I could not find a satisfactory answer. I am not becoming more complacent with this aspect that characterizes so much of the anthropological work being produced nowadays. Nevertheless, I now comprehend two things: that occasionally we have a too narrow and simplistic understanding of “utility” regarding intellectual work, and that a masters' thesis should be a means – not an end in itself.

After the comparison between production and reception discourses, I pursued the idea of social shape of technological development and started readings on how social relations configure the different directions scientific and technological enterprises may take. Because visitors at *Inside* frequently expressed their disapproval on some of the possible artistic explorations of science, I wondered what weight their opinion could have in the future of art and science. Soon I changed my mind, as I found their discontentment rather negligible to this matter, and I reformulated the question backwards, asking myself what weight experts' opinions do have in our lay unaware lives. Scientists, artists, funding agencies, ethic committees, research centers' agendas established by unknown men and women – mostly

men, I suppose –: how much of our lifestyles do they determine with their decisions? Are they aware of their power? Was taste a predicted parameter of their influence? These questions were too broad and vague, though, and my work could not successfully bear a deep discussion on it. After all, Art and Science at *Inside* was this small situation I decided to stick to, an epiphenomenon of too many things, of too many all-encompassing motions and debates.

My learning process was made of ellipses, going back and forth between the exhibition and other amorphous interests which echoed from it. This research attitude has several advantages for those who are curiosity-driven. It allows exploration of different themes, relational thought, non-linear combinations, expansion beyond unnecessary disciplinary boundaries, and so forth. It can be highly self-transformative too, as the challenge of comprehending different literatures from different fields demands an extra effort to synthesize it. I think these elliptic movements also helped me with my anxieties about the sense of purpose, especially in those moments when engaged literature came across my radar. On the other hand, they do not easily convey specialization, which is one important goal in a masters program. I often struggled with that fact and I fought it as much as I considered necessary.

2. Methodological strategy

2.1 situation analysis

As soon as *Inside* started, I realized that I needed a different strategy from the one I picked in the beginning, and that I should have extended my focus beyond discourses of production and reception. For at least I knew I had to abdicate of those terms, so I could move away from the confrontation they suggest. The twofold comparison was feasible, but it seemed to me a rather short and inadequate way to picture what was going on at *Inside*.

I arrived at the idea of the exhibition a little before it came into material existence. Maybe because of that I developed a caring relationship with it, as I knew *Inside* was growing in Cordoaria while I was home, reading my books, or at Leonel Moura's atelier – the Robotarium – chatting about the exhibition design and overall concept. The feeling that something was being produced helped me understanding *Inside* as a project envisioned by a particular person, and created with the aid of many. Cordoaria was no mere space, as much as

Inside was no accidental opportunity, or random situation. There were people behind the project and so there were also their ideas and pragmatisms regarding what an Art and Science exhibition must be like, and how “the art of the 21st century” shall be presented. As a consequence of being aware of its organizing and production processes, when I later visited the exhibition I could no longer look at the rooms as if they were not artefactual and carefully selected; they were no longer innocent to my eyes, neither semantically nor politically.

Inside was then almost like laboratory, a social laboratory made of small social experiments (the artworks and its surrounding relations), or perhaps a whole mega experiment on its own, synthesized from several individual investigations. It represented a particular and confined situation, bounded in the most intuitive sense of the term: spatially and temporally. Though most of the variables in there were out of my control, I was at least able to follow its momentary developments, and the function[ing] of those variables as they were partially controlled by others. This acknowledgment of the situation was a pretty satisfactory first step in overcoming the production-reception binome.

Within the same short definite space and time, there would be a diverse and uncommon connection of characters, practices, discourses, and objects. As Sharon Macdonald states, “All exhibitions entail the bringing together of unlikely assemblages of people, things, ideas, texts, spaces, and different media.” (Macdonald; Basu, 2007). As a convergence of material and non-material elements enabling something new to happen, *Inside* presented the qualities of an assemblage as it is proposed by Manuel Delanda (2006), thus constituting a particular case of social ontology which dynamics, I felt, deserved my attention. Though I could not cover the processes involved in the exhibitions’ materialization, I was able of give an account of the way it worked, of its parts interactions and ramified progresses.

Hence, I decided to look at the whole exhibition as a singularity, and to be less concerned with hypotheses and strict grids of analysis – 'let the situation breathe', I thought to myself. In order to empirically engage with this pseudo social laboratory of mine, I picked Manchester's School's strategy of situation analysis, mostly because it suggested some analytical autonomy of situations. Of course I was also happy with the idea of adapting an old-fashioned methodology to late-modernity. Later, however, I realized that this is no easy endeavor. I now recognize that there are some incongruities between this strategy and my general framework and arguments, which became characterized by more post-structuralist approaches. My

perspective is less positivist and more positive than functionalists' such as Max Gluckman and Clyde Mitchell, the authors I evoke the most. I am now more constructivist regarding both social reality and the possibility of *knowing it*. I am also enjoying experimentation in anthropological work and human sciences in a way that I probably did not before. Realizing that the functionalists' attitudes do not easily reconcile with the ones running from foucauldian, deleuzian, gellian insights, brought me to a dead end. Getting to such dead end is in part a product of the learning process and self-transformation I addressed before, when stressing the experiential side of doing research and writing up a thesis. I hope the reader will put in [this] perspective the incompatibilities he/she may find between this text's two big sets of references. In any case, as one set serves methodology and practical strategy of approaching the field, and the other set serves interpretation, or intellectual strategy, these incompatibilities may well be not that evident. It is my responsibility to alert to this shift and friction, though, and to think over and justify it the best I can.

Situation analysis was an approach particularly acclaimed in the 50s within the Manchester School of Anthropology. Founded by Max Gluckman – a notable africanist with former training in Law –, the Manchester School is famous for its use of case studies. A great part of the Manchester School's production at that time was devoted to African contexts due to the most obvious reasons: Anthropology's primal love with the primitive plus lots of investment in colonial research from the UK government. Rhodes-Livingstone Institute was the main African pole of research for these scholars, at Northern Rhodesia (Zambia). There, James Clyde Mitchell got to know Gluckman's works, including his case study apologia, and in 1956 he published "Case and Situation Analysis", the article that sets situation analysis as a method. To be sure, situation analysis was everywhere before this text. The best example of it is probably the remarkable "The Bridge" by Max Gluckman (1958), firstly published in 1940. But Clyde Mitchell was the first to set standards for it, distinguishing situation analysis from previous approaches such as the method of apt illustration and the Manchester researchers' dearest method of extended case studies.

Since one of the Rhodes-Livingstone Institute's main research goals was the study of tribalism in the new urban formations of Zambia, Gluckman *et alia* were prompt to focus group relationships as ongoing open processes, as they were attending acute tribal identity transformations in their fields. The idea of using case studies draws on the possibility of capturing the particularities of the social phenomena. Indeed, situation analysis was a way of

stating that some cases or events served better the social scientist's ends than others, by virtue of their characteristics. You can tell a "social situation" from a regular event by its richness and density in terms of the involved social dimensions and groups. To my knowledge, some of the best accounts in this genre are the already mentioned "The Bridge", Mitchell's *Kalela Dance* (1956) and "Deep Play: Notes on the Balinese Cockfight" by Clifford Geertz (1977).

As you may be familiar with, the whole strategy of situation analysis is about sticking to a particular event, pertinent to our matters, and trying to understand the larger context from its detailed empirical analysis. "Clearly one good case can illuminate the working of a system in a way that a series of morphological statements cannot achieve.", in Max Gluckman's words (2006: 16). This analytic work can be put in three phases, *a la* Clyde Mitchell: the observable – setting, circumstances, and behavior –, its attributed meanings, and the theoretical interpretation from the synthesis of the two (Bastos, 1999; Mitchell, 1987). One thing that I like about this schema, despite the naiveness of its almost algorithmic enunciation, is the way it precedes the practice/discourse today's orthodoxy. Once we get comfortable with concepts we forget to question them. By focusing on setting and circumstances, situation analysis remember us that there is inquiry beyond practices and discourses. There are encounters, casualties and causalities, objects, institutions, and each of them has a history. There are also emotions, feelings, and intentions – affective games and dispositions –, dimensions that we usually do not cover under our discourse-oriented analytical lenses – I wonder if we are not less reluctant to subsume them to behavior and meaning (and why). Thus, there are forces that condition the possibilities of the event that exceed practices and discourses analytical apertures. In a sense, the event is not only what happens, it is also what makes it happen, a conjuncture to which it maintains a relation of extension. This was Max Gluckman's and Clyde Mitchell's rationale concerning trying to abstract the general from the particular through situation analysis. They were looking for the hints of a larger and more permanent [re]configuration in ephemeral singular situations.

I understand the reservations the reader may have with this language of looking for the perennial in the ephemeral as if knowledge was an operation of extraction, a revelatory decoding of reality or a discovery of its hidden dynamics. I am also apprehensive about generalizations, and I try to avoid them as much as I can – I emphasized it before. Nevertheless, I do not reject the possibility of anthropological knowledge through the identification of repetition and the construction of empirically-based *comprehensions*.

Comprehensions are not necessarily mutually exclusive, even when they are about the same phenomenon, because they do not build on a monolithic notion of truth and knowledge. They are not approximations either, because of that premise. Comprehensions are plausible explanations of a particular set of data from a particular point of view, and they are as contextual as their own plausibility. Comprehensions will last and be valid until they are arguable and remembered. Following the contextual and plural character of comprehensions, I also do not reject the possibility of having interesting engagé perspectives on reality, and/or of using comprehensions in social critique or commentary – quite often we are confronted with a “matter of fact” which is so obviously tendentious that it becomes embarrassing just to watch its conveyer trying to bypass it. In preferring comprehensions over monolithic knowledge we are favoring debate among the different interpretations that can come from more and less engaged perspectives. Calling the more stable, frequent, and durable phenomena of “perennial”, and the more transient of “ephemeral” does not invalidate this acknowledgement of anthropological knowledge as a comprehensive contextual work on reality. What it does is to presume different paces of transformation of social phenomena and to reinterpret their entanglement in terms of extension and or mutual determination, as in this regard the difference between them is a matter of degree, and not of quality. There is no hidden truth, but there are comprehensions that are more lasting and explanatory than others. Those concern the perennial pole and they can be inferred from singular or repeated observations, as anthropologists usually do.

Inside was a unique articulation point between different sets of subjects and their meaningful practices on the aesthetic uses of scientific knowledge and techniques; thus, it was a good candidate for situation analysis as proposed by the Manchester School. And in the end, what was a pleasing meta-commentary would stand out: that the highly educated modern white may not be that different from the Zulu.

2.2 research questions and procedure

Since my main objective became to be as attentive to *Inside* as a whole as I could, taking it as a singularity, as a rich nodal point of people, things and ideas which features could allow me to think with and perhaps to comment or speculate about those different dimensions (but never to abstract or generalize because of its very synthesizing dynamics), I decided not to

advance sophisticated hypotheses and to start with just a couple of exploratory research questions:

- How would objects instill visitors' reflection on art, science, and technology?
- Which artworks would be more controversial and why? Was the way in which they were displayed relevant to that matter? How did the artists play with that?

I knew a great part of the artists represented at *Inside* intended to ignite reflection on themes related to scientific practice and technological development. I was also surely expecting their different objects to provoke people in different ways – there should be the ones to which they would be indifferent, the ones that might consternate or disturb, the ethically and aesthetically approved and disapproved, and so forth. My curiosity was then to the particularities of these encounters enabled by *Inside*, with special attention to the ones involving some kind of tension, no matter if “positive” or “negative”. So I pursued what I called *irritations* around Art and Science – the antipodes of indifference – among visitors, using legible and illegible hints from interviews, drawing exercises and observation. At the same time, I tried to appreciate the artists' critical discourses associated to their objects so I could sketch a general pattern of concerns from both visitors and artists. Gaps between artists' and visitors' general patterns of concerns were not taken as misunderstandings, insufficient expressivity, or failed communication, but rather as an interesting and perhaps revelatory disagreement resulting from personal positioning and the different commitments towards art and science that populated the exhibition.

Then, after a literature review on the social functioning of art, I did some conceptual work on what I saw at *Inside*. Using some examples from the exhibition, I tried to grasp the dynamics of irritation and problematization that happened there, showing how display has a politics of its own on which the artists work in order to attain particular aesthetic, affective and/or political reactions from their audience. These reactions are, however, only partially determined by artists' proposals, as peoples' experiences and positionings seem to play an important role in the interpretation that it may happen and in the constitution of their general pattern of concerns. In order to articulate these ideas, I took advantage of the notion of *problematization* by Michel Foucault, which helped me to think through the irritation I am referring to. Again, this was a research moment of conceptual work, not of theorization in its universal and timeless sense. By using analogy with the foucauldian term, my attempt was to

formulate a comprehension from the empirical data I had collected at *Inside*. This reflects my immediate and more or less spontaneous pragmatic attitude towards knowledge that I still have to deepen in future work. The need for conceptual work followed the feeling of insufficiency regarding the theoretical frameworks I had explored on the social functioning of art, which appeared to lack substantial detail on the way artistic practices may initiate debate and help to create problems.

The last efforts of my research went to critical commentary on my ethnographic results, taking into account that this is a thesis in Medical Anthropology. So far, my research agenda may have appeared to be quite disconnected from the sub-disciplines' range of problems. I am ready to argue against that in deep honesty, as I do not believe in purpose-blind segregation of knowledge, which can be dangerously compartmentalizing and inhibitory of comprehension. My thesis is no more about art than it is about attitudes towards biotechnologies and contemporary transformations in leisure, material culture, and shared conceptions due to their recent introduction, quick development, cheapening, and spread. In that sense, the study of situations like *Inside* can be enriching of Medical Anthropology's critical views on the development of biotechnosciences, with the benefit of expanding its skyline by saying: look, this getting to art too! Contamination has always a residual character that is hard to manage, hard to put into a category. However, it is also too important to be disregarded, as it is thanks to indefiniteness that we realize the possibility of change and construction. Contamination is also so delightfully free that it teaches us of our own sometimes-unquestioned methodological dependencies and obstructive theoretical boundaries.

2.3 materials

During the two-month situation I collected visitors' reactions to several exhibited pieces through observation and thirty three semi-structured interviews (Annexe x). It became a routine to head Cordoaria Nacional from Barreiro every morning and to return by the evening. The survey on artists' biographies and productions was complete by that time, and I even had had the chance to meet some of them (Marta de Menezes, Maria Manuela Lopes, Leonel Moura, and Eduardo Kac). Though it was not one of my prime foci, I tried to cover *Inside's* media appearances. I would daily search on Google for new entries about it in blogs, magazines, and newspapers. For one or two times there were also TV occurrences; the staff

acknowledged my interests and would usually notify me if there was something going on. At *Inside*, a camera and a notebook helped me to remain attentive to aspects beyond discourse. Peoples' behavior – body language, gazing and chatting moments –, space, sensations and some personal reflections on the ethnographic experience were part of my daily annotations. At a point, I also tried to apply an improvised tool loosely inspired by Situationist International's psychogeography (Debord, 2006) with the aim of grasping peoples' experience of space and situation. The main idea was to ask visitors to draw the trajectory they took in a small blueprint I provided, and to associate feelings – using words, smiles and/or other signals – to the different areas of the place. I compiled around thirty of these exercises. Needless to say that dozens of books were bought and borrowed before and after that.

By looking at circumstances, behaviors, and meanings in *Inside*, I will attempt to examine an assemblage with a level of intricacy that I can only shorten. For instance, though I would love to, I cannot tell you how exactly Eduardo Kac got his transgenic flower approved by the laboratory's ethic committee responsible for it (I bet there was one), neither how Stelarc seduced a team of plastic surgeons to do his "Ear on Arm". These surely are conditioning forces sustaining the materialization of *Inside* in a non-causal relationship. And I could just keep unfolding it, synchronically and diachronically. Because of my limited time, energy, and skills, I will stick to the situation, plus two or three larger points that arose from fieldwork.

So we have the evidence that new attitudes and techniques allowed the emergence of new artistic practices. These new practices, by virtue of its processes and aims, make biotechnoscience visible in particular ways. Throughout this thesis, we shall explore how this did happen in a specific situation by looking at the negotiations it started, comprehend its contextual specificities, and comment on its possible meaning.

Chapter Alignment

This thesis⁷ is composed by three parts: the opening chapters, where I introduce the reader to the crossings of art with science that I will be addressing here and to the specificities of my research project – Overture, Project Presentation, and Chapter Alignment –, and the two following major chapters, one descriptive and other analytic, respectively titled Thinking Inside and Thinking from Inside.

The first of these parts is mainly dedicated to the contextualization of *Inside: Art and Science* both at a macro and micro level, calling upon its historic-cultural aspects and particularities within the portuguese art scene. The crossings between art and science are understood here as epiphenomena of a larger material and attitudinal reconfiguration that runs from the recent development of biotechnologies and the emergence of a new relation to scientific truth during the second-half of the twentieth-century. The growing economic value and demand for new media arts is also considered in the “Cognitive and Material Landscapes of Art and Science”, but it is not as deeply debated. However, because this text is a product of quite a brief and situated ethnographic experience and analysis, *Inside* is also dealt with the care and detail that a singularity deserves, and so I try to introduce a bit of what made it so special and by doing so I prepare a bridge for the chapter which is coming next. Though I advance the idea of Art and Science being an interesting anthropological contemporary phenomenon, I do not assume its emergent character, as there were aesthetic-motivated crossings between art and science before in history. Instead of doing that, I stress the novel aspects of making art with science today, and let up to the reader to decide whether to call it new or not. Among the aspects I highlight are the breaking into new spaces, techniques and knowledges, and the critical attitude towards biotechnoscience of such artistic experiments, as a great part of the artists working with scientific theoretical and practical insights nowadays tend to be considerably politicized in their approaches. Though some of these artists like to introduce their artwork as the kind of art that will characterize the future, I also stress the big question mark next to “Art and Science” as an artistic movement, since I do not find it particularly successful and I cannot envision that it will in fact become a mainstream practice in the years to come.

⁷ I rather call it dissertation, but I decided to follow the American rule.

After confessing some of my consternations regarding the research process, explaining my interest in *Inside: Art and Science* and presenting the investigation project, I elaborate a description of the exhibition according to the analytical lenses I defined, which are mainly directed to the setting, circumstances, behavior and attributed meanings within the exhibition, in accordance to the situationist approach I decided to follow. This approach was mostly inspired by the Manchester School's works of the forties, but also by the eighties' psychogeographic experiments of the Situationist International with which I literally play. In Thinking Inside, my attempt is to treat the exhibition as an object per se, or as a situation with a certain level of analytical autonomy. In order to do so, I give an account on its space and leading agents – objects, visitors and artists –, from both a detached distant perspective and a more phenomenological or experiential one. Hence, I try to keep attentive not only to discourses on “The Art of the 21st Century”, but also to body language, to pathways inside the gallery, to silly episodes and unexpected questions, etc. One implicit focus connect all my observations: irritation, or the antipodes of indifference.

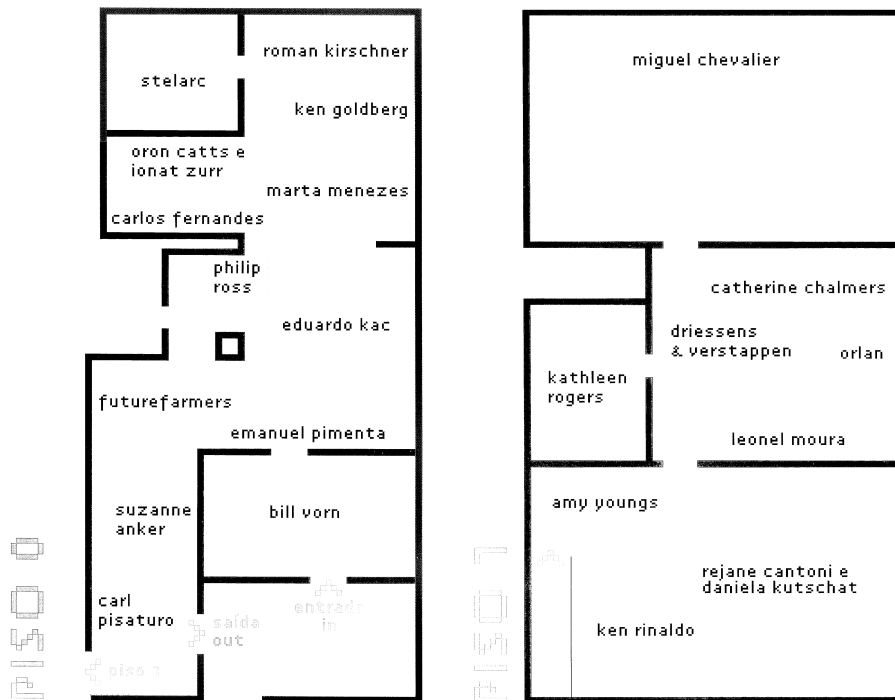
Then, I move on to the analysis of what I just described and I keep on with the playing. Playing in the experimentalist, positive (not positivist), and constructive sense of the word, and joyous too, as Thinking from Inside is an attempt to create comprehensions on this material which are by definition stripped of any theoretical ambition. This is the chapter in which I start moving away from the Manchester School's framework as I discover a different purpose for anthropological work which is not *to know [or to discover]* a monolithic truth about social reality, but to understand, to comprehend, even to tell and to transform, by producing, by elaborating a version, by giving meaning, more meaning, adding complexity to the massive realm of readings of the real. Here I follow the path of progressive unorthodoxy: I start with a hopefully fair-enough state of the art on the social or collectivistic conceptualizations of art, a section conveniently called the “frame work”; then I borrow the concept of *problematization* by Michel Foucault and *use it* to think about the possibility of understanding artistic practice as a means for creating problems, in a section titled “conceptual work”; and in the end, I commit the heresy of being largely opinative about the discursive uses of *future* at *Inside* among both artists and visitors, pointing out its deferring effects on responsibility regarding the crossings between art and science, and the incongruities concerning the conceptualization of *nature* by many of the visitors I interviewed, as if only black-boxed expertise is able to fulfill an ethics of care towards the “natural world”. The full title of this last section is “Peeking through the keyhole: essay

work”, a propos of this deferring and distancing effects of *future* as a discourse and *expertise* as a reliance inside *Inside: Art and Science*.

In the final notes, though I do avoid strict conclusions, I do draw some general comments, especially on the pertinence of my thesis to the debates of Medical Anthropology.

Thinking Inside

«The Art of the 21st Century»⁸



1. Exhibition plan with artists' names (first floor on the left, second on the right).

Cordoaria is a long yellow building near what used to be the Feira Internacional de Lisboa, at Avenida da Junqueira, close to 25 de Abril Bridge. In your way to Belem, the East Gallery exhibition room – the space entrusted to the Municipality by the Portuguese Navy – is the first turret you will see. A green wood gate marks the entrance. Outside there is a large sidewalk, a generous open space, usually clean. The entry hall follows the same large proportions. It is built in thick plain walls to cool the place (sometimes too much). On the right there is the book section, between the entrance and the reception counter. The access to the upper floor is made through the stairs on the left corner. In front, a white large placard prevents you to have a full perspective of *Inside*; it has one small screen installed playing two videos: one introducing the artists, other with short interviews on art and science potential relationships. Though the place looks like any other art gallery, the musty smell keeps its age and history in mind.

⁸ “A Arte do Século XXI”, quoting the large poster that was at the reception counter of *Inside: Art and Science*.

1. First floor

From the entry hall, you can take a peek on Bill Vorn's "Hysterical Machines". *Inside* did not have a precise order to be followed, but people always started the same way, heading towards this intriguing noisy half-hidden piece. "Hysterical Machines" are indeed hysterical. Three voluminous spider-like robots suspended from the ceiling exhibiting a reactive silly behavior; small red and yellow LEDs popping out in the dimmed room: this vision caught everyone's attention, especially children's.

"The aim of this project is to induce empathy of the viewer towards characters which are nothing more than articulated metal structures. The strength of the simulacra is emphasized by perverting the perception of the creatures, which are neither animals nor humans, carried through the inevitable instinct of anthropomorphism and projection of our internal sensations, a reflex triggered by any phenomenon that challenges our senses." (Bill Vorn quoted from Moura, 2009)

The next room is an open space populated here and there by objects, photos, panels, and installations. Works are identified by small tags with the authors' name, first and last, nothing more. I got some complaints on this informational scarcity during interviews. The guide provided at the entrance is absolutely necessary to grasp some of the creative processes involved, and even this is frequently insufficient, as its entries are too short and superficial. In the middle of the room there is a huge sculpture from Eduardo Kac that you probably cannot figure to be a protein model unless you have some kind of background in biological sciences. Despite its dimension, the sculpture was not within the most remarkable pieces highlighted by my interviewees. Rather, people preferred to emphasize the playful virtues of interactivity and the ethical challenges raised by some of the exhibited works.

"It shows a different facet of art, less static." (23 years old, marketeer)

Eleven artists are represented in this large room at the ground level. There is also one extra black box in the farthest left corner, taken by Stelarc's "Ear on Arm" projection, an impressive video of his plastic surgery. "Ear on Arm" is literally an ear on arm created with a biodegradable implant; Stelarc envisioned it to work with a small microphone connected online, so anyone could access the acoustic impressions received by the extra ear. The piece is still incomplete due to some complications with the microphone installation – in a conference, he told the public about his story and how the micro got infected and had to be removed –, nevertheless, the body transformation is totally striking per se.

"So the notion of single agency is undermined, or at least made more problematic. The body becomes a nexus or a node of collaborating agents that are not simply separated or excluded because of the boundary of our skin, or having to be in proximity." (Stelarc quoted from Moura, 2009)

These are prosthetic devices that augment the body's architecture by constructing extended operational systems. "Ear on Arm" was one of *Inside's* utmost attractions, partly because Leonel's advertisement strategy. Stelarc was a little bit all over the Lisbon city during those two months in posters and press advertisement. He also did an interview for the RTP2's show on Arts and Society, *Câmara Clara*⁹.

People would often come and ask me where to find Stelarc's piece, right at the entrance; and though some had gone there to specifically watch it, you would generally get an astonished reaction from everyone. I saw at least one pale white kid being dragged out of the room by a worried teacher. He was about to throw up after a few seconds of "Ear on Arm". This episode made me more attentive to peoples' body language when leaving Stelarc's black-box. Grimacing, shaking heads and muttered comments expressed incredulity, sometimes repugnance.

"Works like the one from Stelarc almost shock me. I mean, not morally, but I look at that and think "my god, we are doing implanting an ear on arm for art!". What are we able to do from now on? We can do everything..." (28 years old, PhD in Art Studies)

The other eleven artworks in the floor are quite plural in their uses and approaches to science. Biology and Chemistry knowledge and techniques are heavily present; there are also some minor incursions in Robotics, Math, Engineering, and Medicine. The strategies of how to take artistic advantage of these disciplines vary from representation to appropriation, with a predominance of the second. An example of this variety is the last pair of works in the room: side by side you have Suzanne Anker's installation of geometric babies sculptures accompanied by a pile of fake-metallic As, Ts, Gs, and Cs and panels satirizing the resemblance between chromosomes and the human body working out, and Carl Pisaturo's "Orbit Machine", a lamp-shape gadget with lighted axes moving fast and unpredictably, producing some delightful kinetic sculptures in the air.

There are some other BioArt¹⁰ projects in here besides Stelarc's: photos of a transgenic partially-human flower, Eduardo Kac's "Natural History of the Enigma"; an installation on a synthetic protein called mArta, or Marta de Menezes "Proteic Portrait"; Oron Catts and Ionat

9 On the 8th of November, 2009, available online at <http://camaraclara.rtp.pt/#/arquivo/150/>.

10¹⁰ I.e., artwork using living matter as privileged medium.

Zurr's "Pig Wings" made of pig bone tissue; and some EcoBotanical explorations, such as an artificially sustained dwarf plant by Philip Ross and Futurefarmers' "Rainwater Harvester/Greywater System Feedback Loop". Some of these art pieces require laboratory work, involving skills and knowledge that are not usually attributed to artists. This is particularly patent in the first three I enunciated.

According to Kac's website, Edunia, the flower, was produced in collaboration with a Professor from University of Minnesota and Apptec Laboratory. Yet, these partnerships are only mentioned in footnotes, and the procedure is written in the first-person:

"The new flower is a Petunia strain that *I invented* and produced through molecular biology. (...) The gene of mine *I used* is an IgG fragment (...)" (Kac, 2009, my emphasis).

I deduce Kac did most of the job creating Edunia, not only conceptually, but also in practice (a different strategy from the one he used in Alba (2000), which was totally commissioned by a French laboratory (Kac, 2000-2010)).

The collaborative aspects are clearer in Marta's work. Though "Proteic Portrait" is presented only under her authorship – no other names can be found in the catalogue – a short-film of Marta and some white-coats working together on the protein creation is part of her installation. In a previous private conversation, I remember Marta telling me about how she had to learn Biology by herself and with her husband's help, so she could conduct artistic research in the lab, instead of just asking someone to materialize her ideas. Marta wanted to engage directly with the techniques as this was the best way to fully explore them. As an artist, she felt somehow privileged in this relationship to tools since she was allowed to actually play with them, which was something that scientists couldn't do. Experimenting at the lab has been a characteristic of her work at least since "NATURE?" (2000), one of her first projects getting considerable recognition within the art world(s) (Menezes, 2003). The same can be said about "Pig Wings". As part of The Tissue Culture and Art Project – Catts and Zurr's artistic research project on tissue technologies, running since 1996 –, these artificially grown tissues in form of wings represent an important interdisciplinary effort. Both artists worked to acquire the necessary knowledge to produce these; they spent a year at Harvard Medical Schools as Research Fellows in the Tissue Engineering and Organ Fabrication Laboratory (2000-2001), among other relevant artistic residencies (TC&A, 2009).

Because the information provided was scarce, as I said before, people would often complain about not knowing how these works were done and by whom. BioArt pieces were especially

problematic at this level. The processes involved were an enigma for the ones who were not familiar with Biology, and questions of authorship were raised. One of my interviewees, a post-doc in Arts, was particularly concerned about it:

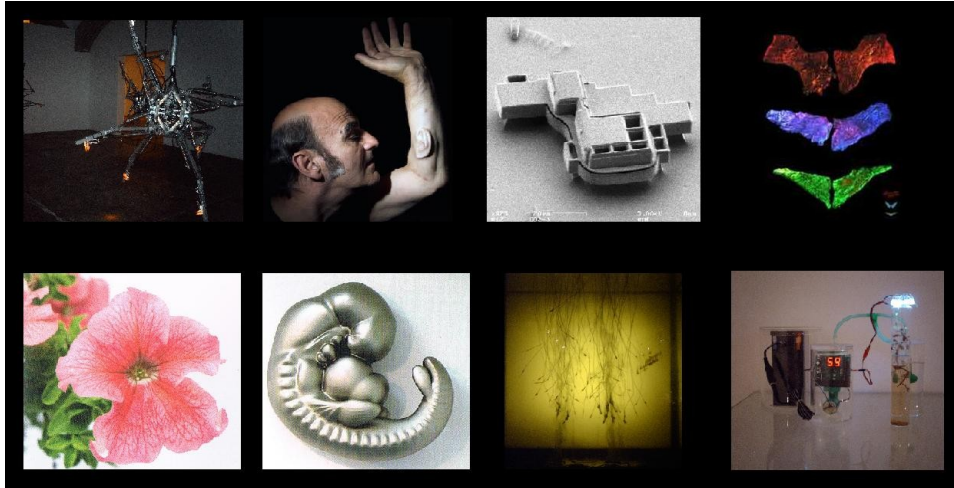
“But then who is the thief here? Is art a sort of advance guard, advertisement and propaganda for scientific discoveries? Or are the laboratories? (...) In some manner, these objets are a product of a collaboration – a lot of discourses on technological art emphasize this issue ... they do an interface. How can I say that the object is mine, then? How much did I work on it? When can I say “this is mine”? It’s only about the concept. It’s only about the readymade! I find this a dead end. I think we are trying to make art grow just by the novelty of things, devices, objects. That’s not how I feel about it.” (44 years old, Visual Arts professor)

For some reason, the other exhibited pieces did not raise the same type of questions, though they could. One of peoples’ favorites, “Roots” by Roman Kirschner, a glass tank filled with liquid containing a stunning cyclic chain of chemical reactions, represented a remarkable use of chemistry that really seemed exquisite and hard to obtain, I dare to say (Kirschner, [n.d.]). Those I spoke to always referred it because of its “aesthetic qualities”, and no one asked about the apparently complex process involved.

“First of all, it’s visually interesting, it’s beautiful. Then the plant doing that. I can’t explain it well. It’s... it’s nice.” (21 years old, student)

The same could be said about the almost-nano silicon model of Frank Lloyd Wright’s Fallingwater House of Ken Goldberg, in the back of the room, next to “Roots”. According to the catalogue, Goldberg used a technology called SCREAM – Single Crystal Reacting Etching and Metallization –, which probably sounds as enigmatic to you as it does to me, or to everyone else. You can enjoy the tiny building with the help of a microscope; a staff member is there to focus it, every time it is needed.

For the readers who are still following the math, Emanuel Pimenta’s visual projection of sound obtained with an algorithm he invented and “Pherographs” by Carlos M. Fernandes – a kind of bio-inspired photography that still puzzles me – complete the room.



2. Some of the artworks displayed at *Inside's* first floor. Clockwise from top left: “Historical Machines” by Bill Vorn; “Ear on Arm” by Stelarc; “flw” by Ken Goldberg; “Pig Wings” by Oron Catts and Ionat Zurr; “Natural History of the Enigma” by Eduardo Kac; “Culturing Life” by Suzanne Anker; “Roots” by Roman Kirschner; and “Junior Return” by Philip Ross.

2. Second floor

Take the stairs to the upper floor and you will find a small sign on the landing’s wall:

“Warning. On the first floor there is a robot taking pictures and sending them to the internet. If you don’t want to be photographed, please don’t approach it.”

(both in English and in Portuguese, as Leonel Moura wanted *Inside* to be a bilingual event; even the exhibition’s catalogue was translated). It is “Robot Paparazzo” by Ken Rinaldo, a photographer automaton that detects people in its surroundings and clumsily approaches them and takes pictures. Though the sign announces some kind of instant online publishing, Paparazzo does not send the photos to the internet, it just saves them in its SD Memory Card and then it is up to someone to do the rest of the job. I took some pictures myself that never appeared at Paparazzo’s website; I guess only the inauguration day was uploaded. To prevent it from sliding freely through the whole floor, the robot is circumscribed by a small wood structure. Despite its simplicity, the robot was a success, especially among kids from school trips – group pictures, they wanted group pictures. But the next work really surpasses Paparazzo in charisma: “OP_ERA: SONIC DIMENSION” by the Brazilian duo Rejane Cantoni and Daniela Kutschat.

Op_era is also an interactive piece, a charming music box made of three 3x3m walls displaying neon-blue virtual strings against the black background. We can play Op_era without touching it, and that is part of why it is so enchanting. It only takes a gesture in the air to make the strings vibrate and produce sound. If you are skilled enough, it is possible to play harmonies and melodies. Though the artists use the violin as a metaphor to explain it, both public and staff would always address it as “the big harp upstairs”.

This floor is far more oriented to interactivity than the previous. Biology and Chemistry are also represented here but mostly through photography and film. Kathleen Rogers’ “Cocoon” and Catherine Chalmers’ “Genetic Engineered Mice” are the main examples. The first, displayed in a separate room, is a close-up movie of Zebra fish embryos while being manipulated probably by a scientist. Roger aim is to question the limits of life and death in molecular genetics.

“In microscopic studies of embryonic growth, visual distortions, physical vibrations, shadows, reflections, scratches, and microbial parasites randomly appear. Awkward co-ordination of eye and hand movements, optical control of the image and the limitations of a fixed viewpoint are used to engage the viewer in a visceral and psychological reading of a mediated life form. I show how physical contact and looking create tremors and palpitations that are tactile, reactive and deadly because the embryonic organism is fragile and invariably killed.” (Kathleen Rogers quoted from Moura, 2009)

The later consists in a photoset of genetically modified mice for research purposes. Because the photos looked staged – intriguingly odd mice on a total white background –, some people assumed that Catherine had produced them in order to take the pictures and make her art. Some found it particularly shocking because of that.

“In a negative way, the repugnance of all that has to do with genetic engineering... Those things disgust me, they affect me: the mice, the flowers... Manipulating life. That impresses me.” (25 years old, graduated in Visual Arts)

The guide was indeed unclear at this; you would have to read the catalogue or search *Inside’s* website to get the “Genetic Engineered Mice” idea.

“Our expanding lifestyle decreases the number of animals on which we spend millions to save, and conversely gives rise to the so-called weed species, the animals on which we spend millions to exterminate. Its a portentous conundrum. People persevere in feeding their need for contact with nature, but what satisfies that longing is increasingly notional. Our culture surrounds itself with natural forms; patterns of flora and fauna abound on walls, sheets, and clothes, but we remove ourselves from the real things in their normal environments. I think we have become a species that prefers the substitute.” (Catherine Chalmers quoted from Moura, 2009)

Amy Youngs, ORLAN, Driessens & Verstappen, Leonel Moura and Michel Chevalier complete the floor. Amy Youngs' Photoshop experiments with human heads were featured at the entrance and they passed almost unnoticed, as peoples' attention would be immediately captured by Paparazzo and Op_era. "Micropropagation" was about the idea of cultivation and the value of human brain(s).

"This installation of digitally manipulated photographs is a visual exploration into the idea that humans could be cultivated in the same manner in which we cultivate plants and animals to suit our own needs. What makes humans "valuable" are our brains, so this is the natural resource that is being selectively cultivated in these images. Micropropagation is the science and practice of rapidly growing, multiplying and manipulating plant tissues in Petri dishes, but in my installation, I speculate upon how that practice might be applied to humans." (Amy Youngs quoted from Moura, 2009)

In the following room, there is ORLAN's photoset, also obtained with Photoshop but reflecting on a different topic. ORLAN is a well known French artist, famous for her body art that took her several plastic surgeries to achieve. As happened with Stelarc, ORLAN also did some interviews for Portuguese media and a conference at *Inside*. Now a professor at the École Nationale Supérieure des Beaux-Arts in Cergy, the artist has been quite a controversial figure since the sixties. Her interests varied through time, but gender has been a constant. At *Inside*, she displays "Self-hybridations", a set of digital images of her face matching different patterns of beauty.

"Avec ces uvres, l'artiste convoque l'histoire, l'art, les cultures de l'Afrique et des Amériques pour construire des êtres mutants et nous interroge sur le regard que nous portons sur l'autre. Depuis le début de sa carrière, ORLAN a pris son corps comme support de son art pour interroger le statut du corps dans la société et montrer les pressions politiques, culturelles et religieuses qui s'y inscrivent." (ORLAN quoted from Moura, 2009)

Driessens & Verstappen and Leonel Moura are presented in this same room, flanking ORLAN's photos. At the front left, there is the duo's collection of computer generated sculptures inspired in self-organization processes called "Morphoteques" – plaster carrots, metal keys and plastic cubic buildings in intriguing shapes, giving you a feeling of incompleteness or over-completeness. At the right, the curator is presenting two art works on Artificial Creativity: ISU, the poet robot, and RAP, the painter, one at the time (for some reason, Leonel substituted ISU for RAP few days after the inauguration). Similar in size and shape, these small robots are shown through a glass exhibitor large enough for you to watch them working and moving around. The canvases they create, whether filled with letters or drawings, are collected by someone from the staff every time they are complete. It is robot's

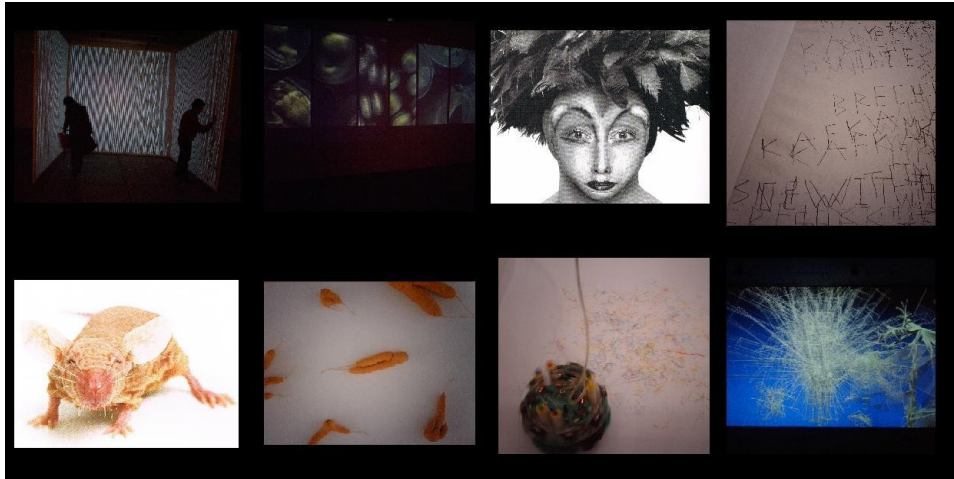
decision when to stop and sign a work. According to Leonel, each final product is also unique as the robots respond to some random elements. So the artist's proposal draws pretty much on the possibilities of artificial intelligence as a new source of creativity and artistic agency.

“Can we launch autonomous forms of life, able to evolve by themselves to a point that they become independent of their creators? Can we make non-human artists that make their own art? In the last years scientists and a handful of artists are involved with artificial life creation. It is still a moderate exercise. (...) But the process is unstoppable. (...) Once we overcome anthropocentrism, a brand new perspective emerges in front of our eyes and minds. Once we stop willing to be the centre of the universe, we discover the universe. And above all, making artists it's much more fun than just making art.” (Moura, 2009)

For most of my interviewees this was not an issue until I inquired them about what they accepted as sources of art and creativity (last question of my interview outline (Annexe x)). Then the piece became problematic.

“No, I don't think so. Man does the robot, and robot does the art. There is always this problem behind. I mean, machines, computers... they do nothing without man.” (42 years old, Architecture professor)

The last room is a vast empty space, one of the Gallery's largest, and it hosts one work only. *Inside's* conferences would usually happen here on Saturday afternoon. One or two hours before the event, the staff would convert it by turning on the white bright lights and arranging some chairs that they kept in a storage hidden behind one of the walls. During the week the room belongs to “Fractal Flowers” by Michel Chevalier, another interactive artwork. This inebriating computer-generated piece consisting in a big wall projection of endlessly generated flowers with fractal shapes invites you to sit quietly and contemplatively. Small white benches are there for you to take your time and stretch your legs. After a while, especially if you read the guide, you are likely to discover that flowers will react to you by twisting and folding. People get closer and photoshoot against the wall, whether adults or kids. The background colors gradually change and the dark room gets red, then purple, then blue. Every change is subtle.



3. Some of the artworks displayed at *Inside's* second floor. Clockwise from top left: “Op_era: Sonic Dimension” by Rejane Cantoni and Daniela Kutschat; “Cocoon” by Kathleen Rogers; “Self-hybridations” by ORLAN; letters drawn by “ISU” by Leonel Moura; “Genetic Engineered Mice” by Catherine Chalmers; “Morphoteques” by Driessens and Verstappen; “RAP” by Leonel Moura; “Fractal Flowers” by Miguel Chevalier.

According to the big poster in the counter at *Inside's* entrance this was “the art of the 21st century”: robotic, computational, microscopic, surgical, genetic. With the exception of four or five pieces suggesting some irony on this, *Inside: Art and Science* also provided a very positive or pastoral picture of a techno-improved future which art would help to construct through the combination of its best creative virtues with the potentialities of scientific knowledge and technique. Indeed, from the organization point of view, and knowing Leonel Moura's work, the exhibition was by far more of an apologia of creatively crossing the realms of art and science than it was a questioning. This expectations of a more “scientific” future was present in the visitor's opinions I collected. For some, the scientific art of the 21st century could even become hegemonic to the point of replacing traditional genres.

“It makes perfect sense to start thinking about science and art as only one. (...) we are evolving towards a scientific society, right? Industrial, Informational... Our ways of expression are more and more becoming akin to that. Paints and paper are doomed, I think.” (27 years old, Engineering student)

“We are living in an age of openness, everything is out there, and art doesn't escape to it, right?” (75, retired teacher)

And yet, despite these shared expectations of technoscientific futures, the triggered reactions were not always pastoral and agreeable.

Irritations I

Inside: Art and Science lasted for two months, and during that time I would regularly visit the place, staying there for four or five hours per day – one morning, or one afternoon – to collect information. Getting to know the staff and gain familiarity with the group working at Cordoaria was not difficult at all, specially because most of them were of my age, part-time employees recruited from an university nearby (IADE, Instituto de Artes Visuais, Design e Marketing in Avenida Dom Carlos). I also got along pretty well with Leonel Moura's direct representative in the field, Maria Riobom, who initially thought I was her age. Usually, there were six of us in the place: three staff members distributed on the floors, me, Maria, and a member from the Municipality.

I knew what I wanted to collect there: even before the exhibition kickoff, I started a field dairy where I would regularly write about artists I had met, conferences I had attended, books and exhibitions of my knowledge. During that preparatory time, since I knew in advance the list of artists that would be represented at *Inside*, I also took the chance to do some review work on their bios and perspectives on art. Once *Inside* started, my attention went to the objects and people there. I had my script approved by Leonel and Luís Quintais, a quite simple set of questions that would help me to understand whether the pieces displayed at the exhibition had instilled or not visitors' consciousnesses on scientific practices and techniques. Remember that that was my first goal when I got there: to compare visitors' and artists' perspectives on the virtues of crossing art with science with the aim of producing art. Though my focus changed a bit, I kept with my script, as I felt like it was working well enough for my new purposes of grasping the overall impact of *Inside* in those people, and to explore impressions of comfort and discomfort.

.1 Artists' six general axes of critique at *Inside*

Most of the artists represented at *Inside* had some kind of meta-commentary on the present and future of scientific practices, technological development and its possible generative relations with art. Though these messages were not extremely positive, they still offered an optimistic view of what our technological future may come to be. With the exception of Bill Vorn's “Histerical Machines”, no work questioned the possibility of having this cautious

dream turning into a nightmare. Vorn's large dysfunctional robots were the only suggesting some kind of dystopian use of technology.

The fact is that these artists tend to assume that science and technology are likely to keep on thriving to the point that there will be no turning point. And in order to attain a good future, it takes us information, education, public awareness, ethical and political commitment, and, of course, some caution. For a great part of these artists, making Art and Science is a way to collaborate in this politicized project of raising public consciousness on the potentialities of technology and scientific knowledge. From the content work I did on the exhibition catalogue, there are six general topics of critique that summarize all the twenty-two different artists' texts published there:

- i. ecological protection and/or environmental attitudes;
- ii. life design, including eugenics and body enhancement;
- iii. interspecies relationship, including animal rights;
- iv. questioning boundaries of some familiar categories such as life and death, and natural and cultural;
- v. artificial intelligence and the augmentation of our action possibilities;
- vi. surveillance, including voyeurism and biocontrol.

The first point is patent in the work of four of the artists, mostly in Futurefarmers' "Rainwater Harvester/Greywater System Feedback Loop", a water saving system they improvised from available materials a few days before *Inside* started. The installation was planned to present a simple way of constructing an eco-friendly house that would use water wisely, reducing its waste; others such as Philip Ross's elegantly monitored hydroponic dwarf plant called attention for alternative techniques in growing plants, viable for the toughest environments.

The second point was way more explicitly present in the exhibition. At least eight pieces would easily relate to a critique on the possibilities of designing life using biotechnology (Suzanne Anker, Catherine Chalmers, Eduardo Kac's, ORLAN, Stelarc, Oron Catts and Ionatt Zurr, Amy Youngs, Marta de Menezes). Suzanne Anker, for instance, who I already quoted in the Overture, addressed it quite directly by asking if designer babies would become a product line in the future. Her sculptures of geometric and fishy embryos hanged in the wall near to

pile of letters symbolizing the nucleobases invited people to consider the [un]ethics of eugenic programs. Catherine Chalmers photographs of genetic modified rats also arose the same debate for a number of times. In a different way, ORLAN and Stelarc reflected on the same idea, but their focus was the body, the own body as locus of design, for aesthetic and prosthetic ends, respectively.

Life design and interspecies relations overlapped a lot, as some pieces devoted to biological manipulation would directly address the manipulation of other living entities by humans. This is the case of Catherine Chalmers, whose work was a clear plea for animals' rights; the same for Kathleen Rogers' "Cocoon", and "Oron Catts and Ionat Zurr's "Pig Wings" made of bone tissue, who also asked for a serious discussion on the status of semi-living entities.

“Advances in bio-medical technologies such as tissue engineering, xenotransplantation, and genomics promise to render the living body as a malleable mass. The rhetoric used by private and public developers as well as the media have created public anticipation for less than realistic outcomes. The full effects of these powerful technologies on the body and society have, in most cases, only superficially discussed.” (Oron Catts and Ionat Zurr quoted from Moura, 2009: 278).

Eduardo Kac's transgenic flower fits this group too, as it proposes the problematic of hybridization and proximity between different species' genetic heritage.

“By combining human and plant DNA in a new flower, in a visually dramatic way (red expression of human DNA in the flower veins), I bring forth the realization of the contiguity of life between different species.” (Eduardo Kac quoted from Moura, 2009: 140)

Kac also brought forth the next topic, on the questioning of familiar categories. He did so by showing the viability of having, he argued, a genetic crossing between a human and a plant. This instills reflection on the proximity of the two, of course. But there were some stronger examples at *Inside* reflecting on the arbitrariness of some limits and definitions we use everyday. By calling them stronger I mean that, for some reason, they echoed more in peoples' heads and got more feedback in interview concerning this topic. These examples are the “Pig Wings”, for the visitors who understood the biological processes involved in its creation, and “Cocoon”, by Kathleen Rogers, which aim was to blur the limits between dead and alive.

“Death is an inherent part of life and shadows of our mortality echo with past extinction episodes on earth. But the body of a recently dead organism is more than non-life. The immune system cells are still active in a recent corpse and continue to search for the physical entity that is disappearing from view. (...) It speaks of the fusion of symbiotic life forms and of the bedrock of subversive violence in the

human biography and it chilling reminds us that on the microbial level we are both host and hostage to our own archaic messengers and executioners.” (Kathleen Rogers quoted from Moura, 2009: 223-224)

Others could be ORLAN's questioning of attractiveness and canons of beauty, and the critique of both Leonel Moura and Stelarc on the notion of self-agency through robotic mediation. These last two artists also fit the next general critique, on artificial intelligence and the augmentation of our action possibilities.

The last point, on surveillance, was surely epitomized by Ken Rinaldo's *Paparazzi Robot*, the one that would search the place for someone to take a picture of, and then would post it on the internet. According to the artist, his robot was supposed to allude both to the spectacle of image and to the growing presence of vigilance technologies.

“Surveillance technologies straddle a delicate balance we have in contemporary culture, where we are often photographed without our knowledge by cell phones, hidden cameras and sometimes “celebritized”. This is a kind of modern baptism with the camera flash and the spectacle of being the focus of the camera becoming a kind of techno anointing.” (Ken Rinaldo quoted from Moura, 2009: 206)

Rinaldo's interpretation was not shared by all, though. For what I can tell from my observations and interviews, people would usually interact with the robot without being aware of its meaning or implied critique. The piece was received like a toy and it didn't provoke much reflection.

And so that happened for several pieces at *Inside*. In fact, despite many artists' explicit desire of raising consciousness on the topics I mentioned, only few artworks seem to have instilled actual reflection. When asked about the risks and benefits of crossing art with science and which objects were more remarkable, ethically or aesthetically, visitors' recurrently stressed the topics of life design, interspecies relationship, and the artistic uses of biotechnology. How can we explain this data?

My guess is that this is more a question of sensitiveness than of miscommunication between artists and the visitors I spoke to. Though all the six general points of critique relate to relatively recent developments of science and technology, the fact is that some themes are more likely to be perceived as problematic than others. For some reason they irritate. This asymmetry can be a revealing feature, interesting in the anthropological sense.

2. Visitors' reactions

“In a way, it feels like a provocation. It stirs you. The ear part, for instance... It shows us other opinions and ways to think about art.” (47 years old, environmental engineer)

Remember the pale white kid being dragged out of “Ear on Arm” black-box by his teacher. As I was saying, he was about to throw up after a short segment of Stelarc's arm surgery. The woman took him out to the sidewalk in front of the Gallery so he could get some fresh air. The rest of the class stayed inside, there were two more teachers there. After a while other kids started to complain too.

This was an extreme episode; even so, it was not like I was not expecting it. It did not take me long to realize that some works at *Inside* could have this kind of impact on visitors. It was written all over their faces when coming out of Stelarc's dimmed room, or when asking the staff what were “Pig Wings” made of. Disgust, repugnance, disturbance... I was expecting them. What I was not expecting was most of my interviewees to be highly educated in Biological Sciences, and other great part in Arts¹¹. Their perplexity with BioArt experiments such as Kac's *Edunia* from the “Natural History of the Enigma”, Stelarc's “Ear on Arm”, or even with Catherine Chalmer's photographs of genetic engineered mice surprised me. Especially the former group, to whom the interventions involved in the works displayed should be familiar as they did not encompass any technique they had not seen before. None of the knowledge and technologies required were cutting edge or the necessarily the latest thing. On the other hand, the second group should be familiar with these experiments too, since most of them had more than one year being displayed every here and there, in big festivals and recognized galleries all around the world. And yet, the irritations and discomforts I got during the interviews were mostly directed to these objects and to the topic of manipulating life and nature.

“In a negative way, the repugnance of all that has to do with genetic engineering... Those things disgust me, they affect me: the mice, the flowers... Manipulating life. That affects me.” (25 years old, graduated in Visual Arts)

“That transgenic things somehow affect me. Not in artistic terms, but ethically and deontologically. Those little carrots [Morphoteques], that blood flower [Kac] (...) Because it blends two things, it disturbs me; a plant with a human gene... it disturbs me.” (46 years old, clinic psychologist)

¹¹ All the interviewees were graduated or college students. From the total of thirty-three, fifteen were directly connected to Arts, and about nine to Biology. Seven more were also linked to scientific education – engineers, programmers, and alike. Please, check it in the [Annexes](#).

One of my standard questions was about objects' immediate effect. While answering about the objects with stronger impact on them, many visitors referred *Edunia* and “Ear on Arm” ambiguously. Awe and reprobation were mixed feelings towards an ordinary fact: the manipulation of nature by man’s hands and will. The articulation often followed a moralistic tone.

“We must be careful, always. We should not become amazed to the point that we start doing things that we ought not to do; particularly if the issue is manipulating living things.” (59 years old, retired agronomist)

Many interviewees confessed to be shocked by some of the possible outcomes of Art and Science, fearing abusive uses of biotechnology in the future. Though they could not precise where does this abuse starts, which limits are or should be there to be respected, there was a clear and common desire for restraint concerning humans' technological and manipulative relation to the world. Some interviewees even condemned these artistic practices, arguing that nature should be protected and preserved as something distinct from human affairs, as a dimension with its own rules that should not be disturbed. References to god, sacredness and wizardry were there.

“As a human being, my ethical sensibility is disturbed by anything related to genetic manipulation in order to create a thing... this issue of man trying to replace nature, or god, or whatever, trying to create new living beings, it is simply abominable. It’s arrogant. These scientists, I wouldn’t even call them artists...” (25 years old, graduated in Visual Arts)

“But we need to find something different; artists shouldn’t behave like wizard’s apprentices.” (44 years old, Visual Arts professor)

From the thirty three people I interviewed, thirteen had not heard about Art and Science before visiting *Inside*. It follows that twenty did and went there quite aware of what to expect from the exhibition. This can explain why so many people appeared to know so much about the general aims of artists working with science nowadays – those of raising conscientiousness on scientific practices and techniques – despite the lack of information in the free guide. When asked about the risks and benefits of crossing the two fields, people were prompt to point these very aims as socially valuable. The way Art and Science could call attention for scientific practices and bring the two fields together was often stressed by visitors; some even called it useful and pedagogical. The merit of capturing new audiences was also attributed to Art and Science.

“The connection between arts and science only brings advantages, There is a public for arts, and a public for science, and in here we can bring them and make them discuss as a group.” (26 years old, unemployed photographer)

“It’s a new way to call attention to science. (...) It is also very important to scientific questions related to applicability, and ethics too. Maybe we can reignite this debate through art. This can also be interesting to artists; we think we tried everything through the centuries. Perhaps this is a way to try new languages, to find new things. It’s interesting to both parts.” (45 years old, Geology teacher)

Thus, Art and Science had the merit of bringing science to public, promoting its debate. For some, this visibility was enough to compensate its inherent risks.

“There are always risks in experimentation – both science and art do it, right? But that’s how it is. I think the risks are good since they help us questioning and debating the issues involved in it. Thus, I think it is ok, we shouldn’t be afraid of risks as long as we speak about them.” (34 years old, Art teacher)

Exploring new paths in science through free artistic experimentation was another valued aspect of Art and Science. By virtue of having no pressure to produce useful things, art could thus work as a ground for unrestricted experimentalism.

“I think that’s the central issue in this exhibition, one of its objectives, to help new ideas to come about from things that we find hard to attain; maybe we can find new paths.” (30 years old, journalist)

“To society this is somehow a call for attention. That’s how I feel about it. To show the different hypotheses, the different options, and then it’s up to us to decide whether to incorporate it in our daily life, in the way we live, or not. In what concerns to art, it’s self-expression, one’s own vision. I respect that. I may not like, I may disagree, but I think it’s necessary for the sake of freedom.” (26 years old, designer)

However, the same way art could provide interesting grounds for experimentation, art could also involve a greater risk regarding it, as it usually observes no deontological code or utilitarian criteria. Again, artistic practices on life, nature, and/or living things were the ones raising this ambiguity. After recognizing the benefits of crossing art with science, the visitors were asked to focus on their risks. If there were some, which were they, and if they were greater than those from art and science separately.

“This can be risky, yes. This can be more risky if they try to go further. (...) Because, as far as I know, there is no deontological code for artists, there is no consensual limit beyond which they

will say “no, we will not go further than this”. Moreover, there is always some tolerance towards artists and what they do.” (34 years old, computational economist)

“The more we mix art and life, with all the experimentalism such as in works and techniques like those from ORLAN, or even Stelarc... particularly in that art that entails genetics, experimentation, in which you deal with life and you can create people with more hears, bizarre heads and so on. That belongs to a domain that I personally question, not as an artistic practice, but as a way “to create what?”. You can create a monster, or a concept of it, or an idea... it doesn't stop here. I think this is just the beginning. It's kind of scary to say it this way. (...) But I think it has to do with being human, this way of breaking the limits. I feel afraid, but this afraid is also a will to break the limits. It's human and it's good.” (28 years old, Art professor)

Acknowledging the artists' intentions was not always a sign of consent and agreement, then. Despite recognizing their intentions of raising audiences' awareness on biotech, some were apprehensive about its efficacy, fearing Art and Science to increase science authority instead of actually contesting it.

“It does not instill reflection. I think it doesn't. I think people don't ask themselves about the ethical or scientific principles beyond the work of art when they're in front of it. I mean, I think the way they are presented here makes it look like a glorification of technology, not its questioning.” (25 years old, graduated in Visual Arts)

“Art is something independent, it doesn't need a utility. Art is art, stop. But if there is something on which art can contribute to society by connecting itself to science is to raise debate around it. But you can't do it in a very simplistic way, this is not “just like that”, automatic. It's not only to get in a laboratory, to play with genes – doing what scientists are doing for decades now – and bring the green rabbit home... how does it question science? I don't know, to me it seems like it doesn't, but maybe it does. – That particular work by Kac, Alba, it was very controversial... – Yes, that's what I was saying; it's not easy to determine what will awake consciences. (...) Instead of raise the critical interest on science it can have the opposite effect and sacralize it, right?” (34 years old, biologist)

An “ontological mess”, a 25 years old graduated in visual arts from Sintra called it.

Ambiguity is the better word to describe the feelings and attitudes towards the manipulation of life with aesthetic purposes within *Inside*. In one hand, these works shocked as they seemed to open up room for monstrosity, on the other, they appeared to be the mirror of a society in which science is becoming more and more present. These works irritated, but they were the product of free expression and envision in a world like this at the same time. People would often be contradictory in their appreciations of it, stressing both the good and the bad

of having a realm of free experimentation over living matter. This kind of aesthetic freedom was sometimes presented as a necessary evil, as a commitment to freedom that one should preserve despite fearing it. Awe and renitence, appraisalment of critique, skepticism, and so forth; it was no easy to have a structured and coherent opinion on Art and Science's risks and benefits as it encompassed too many conundrums. It was complex.

“It raises questions that we frequently dismiss. Those of life and its limits: where can we go, what can we manipulate, is it ethical or not? (...) Works like the one from Stelarc almost shock me. I mean, not morally, but I look at that and think “my god, we are doing implanting an ear on arm for art!”. What are we able to do from now on? We can do everything... (...) But I can't say that we must regulate art: I think it is not correct, but still that's my particular view.” (28 years old, PhD in Art Studies)

“Everything in here makes me think a lot. How far can we go with this? The ethical questions involved...” (26 years old, unemployed photographer)

The difficulty in appreciating Art and Science, particularly in appreciating the kind of objects being discussed here – i.e., the ones dealing with living matter such as Kac's *Edunia*, Marta de Menezes' protein, “Ear on Arm” by Stelarc, “Pig Wings” by Oron Catts and Ionat Zurr, Catherine Chalmers photos of genetic engineered mice, etc – was a clear product of the unexpected synthesis of the two realms and the combination of conflicting factors. You cannot condemn the transformation of nature and praise technological development at the same time. You cannot condemn particular uses of living matter in artistic practice and praise aesthetic freedom as a value at the same time. And yet that is what happened at *Inside*. On one hand, the people I interviewed would fear Art and Science, particularly BioArt, because it could intervene without rules on some sort of “matrix of life”; on the other, they would argue that art should be free, that it could not be regulated by any means, and that it had the immediate merit of bringing scientific practices to debate and exploring new paths for both artistic and scientific development. Ethical decision concerning what and what not to do in art with scientific knowledge and techniques was then consigned to individual conscience. Despite the feelings of fear, sometimes even disgust, people denied the need of regulating these artists practices. Hesitantly, they stated that artists should not be restrained, for their freedom is what really makes art exciting. It should be up to them to decide whether some intervention is ethically acceptable or not.

“Lots of them [risks]. Well, here we have genetic engineering, transgenics... I mean, we are on shaky ground. This will demand some explanations from the ones who are trying to work on it. I totally agree with it, but...” (34 years old, computational economist)

“Everything can be dangerous if we take it to the extreme. I think there must be some limits. That whole ethical thing around choosing our kids, if we want them blond or dark...that’s already possible, right? And to choose them to have fewer predispositions to certain diseases, or others, I think that’s already exaggerated. – Should we apply some rules to art? – I don’t know. It also depends on where are people going, since everything is possible. I don’t know it depends. I think it should be individually assessed. Of course we cannot restrain artists. (...) But maybe we need some limits. (...) Your freedom begins when others’ freedom ends, and that’s very difficult to manage nowadays, there is a lot of freedom. – Does this kind of art demand a special kind of regulation such that... – It has to come from artists’ consciences, in my opinion. One must think about limits. That also depends on what you are doing and what is the point you are trying to make.” (36 years old, Dance teacher)

The benefits of scientific research were also a balancing point on the appreciation of these aesthetic experiments. Maybe they could help scientists finding something new. In the end, a lot of interviewees brought about the idea of a world in change. After all, this was “The Art of the 21st Century”. The catchphrase, introduced at the entrance in a big poster hanged at the reception counter, was for some the rationale to make sense of *Inside* as an experience. Its oddity could thus be explained as a premonition of something that has not quite yet arrived, or it was just beginning: our biotechnological future. Our certain and unstoppable biotechnological future, which shall transform every aspect of human existence, and art is no exception – or so it was said. Inevitable, it is. To many artists and visitors, crossing art with science was an anticipation of this inescapability. Perhaps it was only a matter of time until people start getting familiar with these practices.

“We are living in an age of openness, everything is out there, and art doesn’t escape from it, right?” (75 years old, retired teacher)

“This is not beautiful art, is something else. I don’t even know if we should call it art. But I’m here to study, to learn, to know what we are starting to call art that is different from what we are used to. Supposedly, art is to be beautiful, pleasant, now it’s not. It’s more abstract and cerebral, less emotional, I think. (...) I don’t think this has advantages. It’s different. It’s neither better or worse, it’s different. Perhaps this will be better assimilated by the future generations, I don’t know.” (54 years old, entrepreneurship)

Inside: Art and Science seemed indeed to stimulate a lot this kind of envision and guess on what will the world look like in ten, one hundred, one thousand years. How will art be and how will it cooperate with science in creating a whole new world? Though I did not ask about them, these were recurrently addressed issues. These topics were a source of doubt, guess and anxiety, triggered by the *Inside* experience.

“Genetic manipulation is so important, particularly in what concerns to curing diseases, etc. That’s all fine, but then when we start choosing blue eyes, for instance, or green, if we want a smoother or more wrinkled skin. I mean... Maybe it’s because I’m sixty years old, maybe I can’t understand this new philosophy, right?” (59 years old, retired agronomist)

Experimenting with spatial experience

Inside was deliberately white – and yellow and red and black, but mostly white. Cordoaria's East Gallery is a large interior space with almost no sunlight. The walls are painted in white so they can reflect the light from artificial illumination. Leonel Moura chose to use as little decoration as possible and to keep it this way. This could have been a budget option, but for some times I heard him commenting on the nice clean appearance of it. It looked like a scientist's workplace, or at least like our usual pre-made idea of what a scientist's workplace may look like: white, clean, simple, spacious, under decorated, perhaps full of instruments, unintelligible diagrams and photographs. *Inside: Art and Science* was not far from this description. The colors of the exhibition's logo were basic and strong, the objects displayed were tagged only with the author's name, the shelves and showcases were as white as the walls, covered with glass and blocked by silver screws. No dust, no music, no funky corners, there were only the objects organized in parallels and perpendiculars, the smell of age, and the annoying noise of robots. Two or three red warnings would stop you from getting too close from them and get hurt – those placards were the most extensive information you could find hanging on the walls.

I knew Leonel Moura opted for this look for some reason. He wanted to fill the experience of *Inside* with specific sensations. Because this was an Art and Science exhibition, he was clearly taking advantage of our pre-made ideas of “scientific spaces”, those that we construct from sci-fi and police television shows. *Inside's* physical qualities as an exhibition were likely to trigger feelings and direct interpretations on its contents. The augmentation of the scientific and futuristic aspects of these artistic practices seemed a clear consequence. Obviously, I was interested in this effect too, as I was trying to grasp the exhibition as *a situation*.

.1 SI: Situationist Inspiration

The leap from Gluckman's *et al.* social situations to Situationist International is not mind-blowing. Yet, it helped me sophisticating the notion of situation I was borrowing from The Manchester School. Space is not especially addressed by the sociologists as an important

component of situations' structure and dynamics. Circumstances, behaviors, and meanings are not thought as spatially, materially, or environmentally shaped. From my perspective, there are surely some situations in which it is ok to downplay these aspects's influence in social and individual experiences. However, and that is what happened with *Inside*, others seem absolutely tied to them. For *Inside*, because we were dealing with provocation, with instilling emotions and reflection within a selected environment, I felt like it would be absolutely necessary to think space as a part of its experience by visitors.

I did not know much about Situationist International, but I had heard about it before, mostly about “The Naked City” and Psychogeography. I also knew Guy Debord from *The Society of the Spectacle*, and that was it. Soon, I found one text titled *Report on the Construction of Situations* (Debord, 2006), which called my attention to the possibility of constructing situations through space work – urban planning, architecture, deco, artistic intervention – and that these situations can be affect-oriented.

“Spatial development must take into account the emotional effects that the experimental city is intended to produce. One of our comrades has advanced a theory of “states-of-mind” districts, according to which each district of a city would be designed to provoke a specific basic sentiment to which people would knowingly expose themselves. (...) The comrades who call for a new, free architecture must understand that this new architecture will primarily be based not on free, poetic lines and forms — in the sense that today’s “lyrical abstract” painting uses those terms — but rather on the atmospheric effects of rooms, hallways, streets — atmospheres linked to the activities they contain. Architecture must advance by taking emotionally moving situations, rather than emotionally moving forms, as the material it works with. And the experiments conducted with this material will lead to new, as yet unknown forms.” (Debord, 2006)

So I decided I wanted to conduct psychogeographical research on *Inside*, or some adaptation of it, as an attempt to survey its non-discursive traits.

“Psychogeographical research, “the study of the exact laws and specific effects of geographical environments, whether consciously organized or not, on the emotions and behavior of individuals,” thus takes on a double meaning: active observation of present-day urban agglomerations and development of hypotheses on the structure of a situationist city.” (Ibid.)

It was not like I wanted to know the exact laws ruling the effect of spatial characteristics on peoples' reflections on Art and Science, frame by frame, wall by wall, option by option. But at least I could try to grasp what it felt like to visit *Inside* and to be invited to think about its objects; I could try to complete my comprehension of the situation as a whole. Anyway, I lacked the tools to do it. At *Inside*, a camera and a notebook was all I had helping me to keep

attentive to aspects beyond discourse. Peoples' behavior – body language, gazing and chatting moments –, space, sensations and some personal reflections on the ethnographic experience were part of my daily annotations, and that was it. The only way I had to learn about peoples' experiences was through observation and ultimately, for the ones I interviewed, through conversation, by asking and hearing. I could not experiment much. Or maybe I could. Three weeks before the exhibition was over, I invented a game.

.2 The game

The game was titled “Exercise on the experience of *Inside: Art and Science*”, and it was distributed at the end of the exhibition to the visitors that looked supportive – i.e., that were not in a rush. The main idea was to invite visitors to draw the trajectory they took in a small blueprint I provided, and to associate feelings to the different areas of the exhibition. People were free to use words, smiles and/or other signals to express themselves. In the two weeks I had left, I collected thirty one of these exercises.

When I first thought of playing this game, I was pretty aware it could become a big fail or a dead end. I had no plan of what to do with the material in the end. Retrospectively, I am glad I did it. I not only had fun with it, but I also felt like I was actually proposing and experimenting something. Furthermore, if I had not tried, I would not know if it worked or not. So it was definitely worth it. But as you can guess from my conscientious words, I am still not sure of how to handle the data.

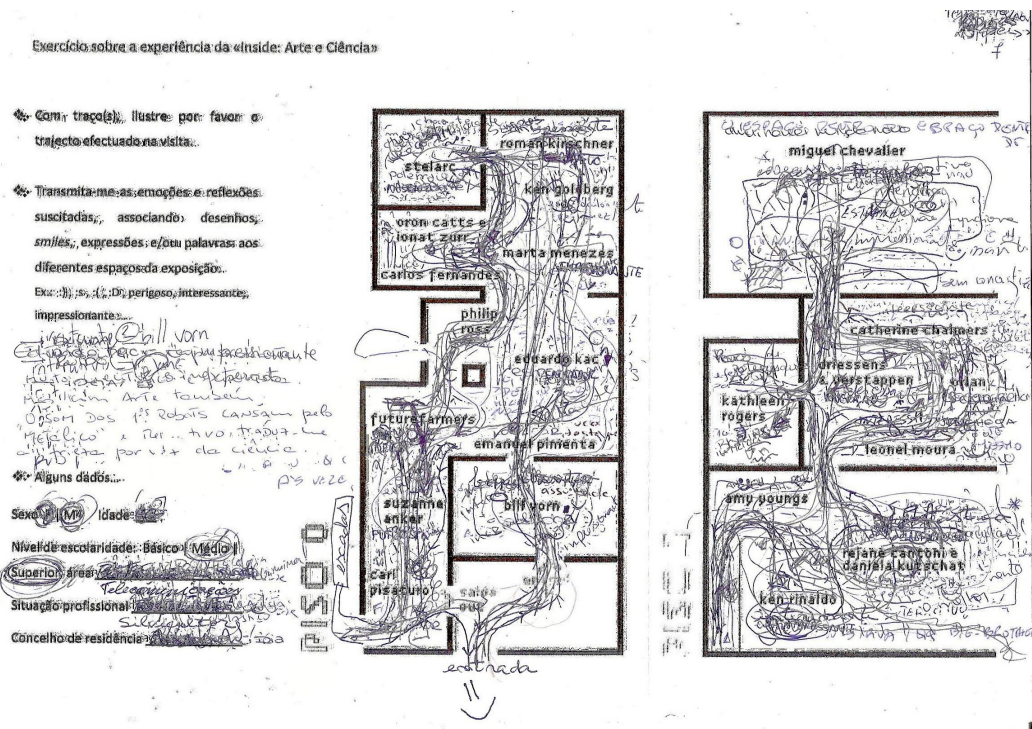
While in Berkeley, I had the opportunity to speak with someone who worked at the San Francisco's Exploratorium for years. According to her, the kind of analysis I naively orchestrated was conducted at the *Exploratorium* with a similar aim: to comprehend the relation between peoples' reactions to displayed objects and spatial organization. They used monitoring cameras and a highly sophisticated software instead of goofy paper blueprints, though. With those tools, they were able to combine data from visitors' trajectories, facial expressions and objects¹².

Though I am not sure of how to analyze my exercises systematically, I can still make some interesting inferences from their raw intuitive examination. First, by overlapping the thirty one drawings, I can tell that the great majority of people took the same path – which is not surprising, they basically followed the order suggested by the free guide. I can also tell that

12 See the miniatures of the thirty one drawings at the [Annexes](#).

there is a repeated reaction of disgust to Stelarc's extra-ear that is expressed both through words like “nojentó” and smiles such as “:s”. According to the draws, “Ear on Arm” was the most disturbing object displayed in *Inside*. The works by Suzanne Anker and Kac were distressing too. On the contrary, “Op_era”, the interactive musical object by the Brazilian couple Rejane Cantoni and Daniela Kutschat, got many smiley smiles and expressions of astonishment.

The younger visitors were not the only ones preferring smiles; actually, a great part did use them. It was intriguing to notice how comfortable I was reading and understanding peoples' drawings, despite their apparently highly subjective interpretation. Smiles may well constitute an interesting parallel emotional grammar to be explored in further epistemic experiments like this.



4. Twenty-five spatial exercises overlapped.

In addition to these points – which more or less corroborate the information I gathered through semi-directed interviews and observation – I also got a sense of the emotional progression within the exhibition. By emotional progression I mean the way one feeling would come after another and another as a product of *Inside*'s series of spaces. Thus, considering the succession of smiles, the first floor was clearly a less pleasant experience than the second. On the other hand, it was probably more challenging. Recalling the

interviews I quoted in the previous section, this mirrors peoples' consternation towards artistic freedom and ethical conundrums concerning the use of living matter in art. Because the first floor was richer in BioArt works, it provoked more “ :s ” and “ :(” than the second. With the predictable exceptions of “Genetic Engineered Mice” and ORLAN's pictures, the second floor was indeed a feast of “ :) ” with an amazing icing on the cake: Miguel Chevalier's “Fractal Flowers”, “ :o ”, “cativante”, “espectac

I am happy the “Exercise on the experience of *Inside: Art and Science*” gave people the chance of communicating their experience in a slightly different way that did not necessarily privileged the spoken or written word. Nevertheless, I know that I would not be able to interpret “the game” if I had not conducted interviews on the effects of *Inside's* objects on visitors. With one set of data, I got feelings reason[ing]s, with another I grasped intensities. In the end, *Inside: Art and Science* revealed itself as an aesthetic, ethical and political experience for the ones who visited it, instilling emotions and reflections in a somehow structured way. We shall now move to an interpretation of how did this happen in order to understand the recurrences at stake here.

Thinking from Inside

Art and People: frame work

state of the art

The questions of why people make art and what art does to people have been largely addressed in academic literature from several different perspectives. Interpretations of its psychological and social significances, historical changes, and philosophical aspects are more than few and hard to synthesize. Art as a concept is then extremely polysemic.

As a phenomenon, art forwards us to all sorts of practices and explanations. Accepted media, styles and genres multiplied during the last century; they also tended to become less hierarchical in terms of relative importance (at least ideally). The number of theories on art's purposes and qualities increased concomitantly with this renewal of paradigms of practice. Outside academia, the term art is pretty much used in its older sense of skill, aptitude and/or dexterity, which goes back to its relation to the figure of the artisan (Lenoble, 1990; Overture). The dictionaries do not help much to grasp what art is. Among the many definitions provided by the *Oxford Dictionary of English*, you can find "the expression or application of human creative skill and imagination, typically in a visual form such as painting or sculpture, producing works to be appreciated primarily for their beauty or emotional power" (2010). This is a fair enough general definition compared to some others I found¹³, yet it fails the test of some modern approaches to art which are no longer motivated by beauty, emotional puissance, or necessarily drawn on skill.

Modernity accentuated the difficulty in defining art in peculiar ways. If there was a modern obsession with purification of objects and subjects, of splitting them in categories, of divide and conquer – analytically, bureaucratically –, that surely does not easily apply to the development of art in the same period. As Jacques Rancière (2006) succinctly put it, the twentieth century marked a shift in the western conception of art with the emergence of an

¹³ Merriam-Webster's definition on Art, for instance, emphasizes consciousness of artistic practice and calls upon the creation of aesthetic objects to explain it: "the conscious use of skill and creative imagination especially in the production of aesthetic objects; *also*: works so produced" (2011). Britannica Online, other popular example, puts art in the following words: "the use of skill and imagination in the creation of aesthetic objects, environments, or experiences that can be shared with others." (2011). There are problems with both definitions, as I stressed in the main text, regarding not only the criteria of skill, but also of function, and, last but not least, the use of the term "aesthetic objects" – I wonder what they mean by that.

aesthetic regime that is no longer focused on representation. Freed from rules of doing and hierarchies of matters and genres, art became a singularity defined by a particular sensible mode. In the process, the destruction of criteria to identify what is this singularity is a consequence enabling the explosion of categories and the blurring of divisions. In a way, art gets stuck in this move, tangled between wishes of rupture and recognition.

Borrowing Hal Foster's explanatory device, two axes are then to be coordinated with the advent of modernity in art: the axis of *quality*, related to tradition and artistic standards, and the axis of *interest*, epitomized by the Avant-Gardes, that aims to put to test our cultural limits (Foster, 1996: xi). The first allows aesthetic criteria and judgment, the second encourages freedom and uniqueness; the tension between the two makes of art an open question, an amorphous and ambiguous set of practices that is hard to define because it always intends to beat any definition. Art is then supposed to be always new while always remaining the *same* in the aesthetic regime. In a way, at least in these abstract parameters, we can think of it as an ontological paradox, or perhaps a paradoxical ontology. How can art *be* in such contradictory terms? How can art be always *different and new* and *still remain art*? Yes, we value novelty but this is definitely not a matter of "anything goes". So *what goes*? Does anyone know what this *same* is?¹⁴

There are several ways to approach this paradox. The most immediate one would be to ask what qualities are permanent across the different existing artworks and try to define art through some kind of essence or inherent set of properties. However, the radical change of what counts as art enabled by the arrival of the aesthetic regime – which, again, is characterized by the dismissal of *mimesis* as an axial aspect of doing and judging art and by the emergence of a stronger commitment with experimentation – really puts the old aesthetic schemes to test and proves their erosion. It becomes harder and harder to explore the issue under the classical terms of beauty, form and skill, and even the aspect of meaning was undermined, as communication depends no longer on depiction.

14 I am naturally skeptical of old questions with many, sometimes redundant, solutions. It recalls me Duchamp's witty words: "There is no solution because there isn't any problem". Or maybe there is in fact a problem, but problems are usually too easily misplaced. And because our will to know is enclosed in a certain thought style (Fleck, 1981) – to think outside the box is not as plausible as it may seem –, we can never fully understand how fallacious our problems are in the present. Maybe this critique applies to art's definition attempt, maybe it does not. Anyway, the questions I mentioned have been very present in modern western intellectual history; countless authors addressed them, ones more explicitly than others.

As the traditional approaches lose explanatory power others appear, privileging function over essence as a way to clarify what art is, or what remains the same within its change. This approach through functioning, more external and context oriented came to transform our mode of inquiring art. I am afraid to put too much emphasis in this move from essence to context, but having read some art literature beyond social sciences', it does not seem an unreasonable point to make. On the other hand, explaining what art is by saying what it does is as old as psychological accounts on artistic practice and aesthetic experience, for instance¹⁵. For what matters here – i.e., to coherently ramble about the relation between art and people – the approaches through functioning comprising collective elements are the most interesting to consider.

.1 Primitive Art, Interpretationism, Marxist Critique, and Institutionalism

Anthropologists have been concerned with objects and techniques since ever. To collect and describe artifacts and their associated procedures – the study of Material Culture – was a common component of ethnographic work, a dimension to add to group's social, political and cultural specificities. Until the second half of the twentieth century, anthropologists were pretty much oriented to a sort of cataloguing work, as they felt some communities were about to disappear thanks to cultural assimilation processes. Big collections of objects, illustrations and notes on their use from this period can be found. Some anthropologists would organize them just in terms of quotidian use – housing, clothing, agriculture, etc –, others wrote serious analytical and comparative treatises, such as Leroi-Gourhan (1984a; 1984b). At this point, anthropologists' attention to art – the art of the primitive, I should recall – draw on the presumption of straight relationship between it and culture. As in a synecdoche, artifacts were supposed to mirror the groups' mentality, since their production was necessarily constrained by it. Because of that, the inquiry of primitive art by anthropologists was primarily focused on artifacts' style – representation, decoration and symbolization patterns – and functional relations to tribal organization – ritual, social hierarchy, life cycles, etc¹⁶. Primitive art was

¹⁵ Cf. Freud on Leonardo da Vinci's paintings.

¹⁶ It is worth to mention *Primitive Art* here, the book by Franz Boas published in 1955. Though this text summarizes earlier anthropological accounts on the art of the primitives – thus following the presumption of the synecdochal relationship between art and culture –, we can tell that there is a perspective shift going on with Boas in text passages such as: “We conclude from this that besides the influence of the technique there must be some other causes that determine the individual style of each area. I doubt very much that it will ever be possible to give a satisfactory explanation of the origin of these styles, just as little as we can discover all the psychological and historical conditions that determine the development of language, social structure, mythology

thus considered as a vehicle of social cohesion and reproduction. It did not have artists, only crafters and artisans. Its change was rarely studied unless the point to make was cultural diffusion. Therefore, despite the westerners' fascination with it¹⁷, primitive art was a minor genre established by ethnocentric eyes.

This account on primitive art by anthropologists is remarkably different from the approaches to Art and Material Culture that were about to emerge in post-war Europe. It is hard to say whether art defied academia to think about it differently or academia started it by virtue of some new kind of responsiveness. Nonetheless, the traumatic experience of war and economic recovery in Europe seem to have brought them together in multiple ways.

One of its versions is the development of symbolic and interpretative analyses of art, mainly by Art Theory (but also from some American cultural anthropologists), which regards artistic practice as a means of expression, or of aesthetic communication, with a language of its own built on symbolic conventions (Gell, 1998). Abstract expressionism was amply commented on this basis¹⁸. Despite its new themes, this was more or less a continuation of previous interpretations of what art is and does (Becker, 1984: 146). An alternative and newer convergence between artistic practice and academia happened around the critique of mass consumption. Pop Art and the revitalization of the Marxist critique on materiality go almost side-by-side. Though praise for the later takes a little time more to happen, it ends up having important consequences on the way social scientists deal with objects today, including artistic ones. In their way of conceiving the relation between base and superstructure, Marxist authors necessarily give an interesting analytic primacy to materiality over some sort of invisible normativity. If we think of what has made the anthropological orthodoxy so far, this approach is probably its antipode. The synecdoche I pointed out before is inverted: the constraining of culture by materiality is said to be stronger than the contrary. One early and particularly powerful extrapolation of this to art is given by the German cultural critic Walter Benjamin in "The Work of Art in the Age of Mechanical Reproduction" (Benjamin, 1969). In his essay from 1936, Benjamin analyses the deferred consequences of changing modes of production on art, specifically the effects of techniques of reproduction on what he calls the *aura* of the work of art. I shall get back to this later in this chapter. In a few words, the author

or religion. (...) *We have to turn our attention first of all to the artist himself.*" (Ibid.: 155, my emphasis).

17 Please, check the second subsection of "Art as a Problematizing Activity: frame work", in Thinking from Inside, a propos of this western fascination with the primitive and its relationship with the quest for authenticity.

18^r Cf. Harold Rosenberg on Pollock and action painting in relation to Post-War Existentialism.

argues that film and photography contribute for the ahistoricization of artworks as they become detached from their processes of production by virtue of being reproducible. What it brings is a certain proximity and universal equality of artworks that really alters peoples' attitudes towards them, including perception¹⁹. According to the author, the age of mechanical reproduction frees the work of art from its previous almost ritualistic function of praising beauty to equip it with a new largely political one. But the new art announced by Benjamin comes at cost of its own aura. Hence, the "contemporary decay of the aura" (Benjamin, 1969: 223) draws on this loss of historicity, or relation with tradition, that until then has guaranteed the work of art its authenticity. Before reproducibility, the ritualistic artwork was also distant in a way – or "unapproachable", to use Benjamin's words (Ibid.: 243) – and so it participated in a different mode of perception of time and space. Something deep changes in art as a consequence of its new material possibilities. An extension of this conjecture of cultural constrain by materiality is the idea that, somehow, underlying asymmetries might shape superstructure's dynamics. Marxism brings it forward when emphasizing how uneven relations of production relate to class struggle.

On this topic, there is another interesting proposal that seems to anticipate what would become a great part of the eighties' Art and Material Culture research agenda. I am thinking about Pierre Bourdieu's *Distinction: A Social Critique of the Judgment of Taste*, published in the late seventies. *Distinction* raises the question of how taste can be understood in terms of project of class. In his empirically-based research, Bourdieu looks at the distribution of taste among French groups and suggests a classist interpretation of it with respect to power. Because different classes have different resources²⁰ they shall assume different strategies of distinction. The social construction of taste is thus a symptom of the underlying battle between groups, which use it strategically. This approach introduced some important insights to explain patterns of consumption and it has obvious consequences to the study of art. From the eighties on, several authors combined this with Gramscian hegemony to explore taste formation (Kurtz, 1996). Just as it serves domination, taste can also be used to subvert the

19 Though Benjamin does not write on commoditization of art here, the issue is pretty much implied in his statements. If reproduction distracts us from production, if it makes us forget that a quantum of work was required in order to obtain a particular piece, persuading us of an inherent independent value, we can say that it is a vector of alienation. Guy Debord's *The Society of the Spectacle* (2000 [1967]) gives an interesting engaged account on this ideological experience of visual reality.

20⁷ The economic, social, and cultural capitals, as Pierre Bourdieu puts it, which are the structuring dimensions of *habitus*. Capitals are acquired through socialization, and some are more flexible or prone to change during lifetime than others.

system and undermine inherited distinction(s). This happens because taste is largely displayed through objects and it can be [at least partially] learned. Subsequently, some authors turned Pierre Bourdieu's logic upside down and took the concept of strategy further to the level of the agent. Daniel Miller's *Material Culture and Mass Consumption* (1994) on identity construction through consumption and/or appropriation is a well-known example. Academic interest in dynamics of reception also grew as a counter-proposal to the thesis of a necessarily more homogenous world due to globalization. *The Social Life of Things*, edited by Arjun Appadurai (1988), is one attempt of the kind, proposing the investigation of objects' trajectories while circulating as a way to understand contemporaneity. A social biography of things²¹ shall highlight not only appropriation phenomena, but also contextual resistance to it, whether by inability to appropriate or deliberate adversity. Pierre Bourdieu's *Distinction* did not predict this diversification of perspectives. Still, it had a contribution to it, as it did sophisticate our way of inquiring objects as mediators of social relations by reworking its functions in terms of power.

The second half of the twentieth century is also the period of the rise of another set of considerations on art's collective dimension(s) which probably constitutes the groundwork for the majority of social scientists working on Art and Material Culture nowadays: the Institutional theory of art. Curiously enough, the institutional theory of art did not come from the social sciences, but from philosophy. Arthur Danto was the first to write about it, back in 1964; George Dickie developed it a few years after and became its main figure. Inspired by Duchamp's readymades²², for Danto and Dickie art can only *be* within particular contexts, authorized by specific individuals (Danto, 1964; Dickie, 1969; Dickie, 1971). Thus, art is inherently institutional as it depends on the dynamics of praise and dispraise of what they called the "art world". This philosophical assertion was abundantly debated²³; nevertheless, it turned to be a very generative idea for social scientists. In 1982, the sociologist Howard S. Becker wrote an extensive text on what these art world(s) dynamics are where he called attention to their multiple dimensions, such as market, distribution, exhibition, collection, academia, etc, and their associated agents. Because institutional theory is content blind, the

21¹ Originally proposed by Igor Kopytoff in 1986, and published in the book edited by Appadurai.

22 Actually, the 50s and 60s seem to have been a period of readymades' revival, I cannot precise you why (Foster, 1996). The reasons probably escape the war and economic recovery episodes I stressed above. Nevertheless, its comeback worked to instill these philosophers' creativity and to start a whole new paradigm on what art is.

23¹ Cf. Robert J. Yanal. *Institutions of Art: Reconsiderations of George Dickie's Philosophy*, for instance.

paradox I mentioned before on artistic practice as a quest for novelty within the same, as a permanent tension between uniqueness and recognition, originality and standards, doesn't really constitute a problem to it. Art is whatever the art world(s) declares it to be. Despite the obvious troubles with this definition – in matter of fact, its circularity and relative emptiness doesn't explain much of what art is –, this was the perfect fit for social scientists who wanted to study art without getting close to aesthetics.

Becker defines art worlds as patterns of collective activity, or “modes of collective action, mediated by accepted or newly developed conventions” (Becker, 1984: 369). This definition reproduces the synecdoche explanatory schema I pointed out for early anthropologists, but it does it in a more sociological fashion as it replaces the referent of culture for social relations. For Becker, “the world of art mirrors society at large” (Ibid.: 371). The author also gives primacy to the artist over the object and/or other art worlds' participants, arguing his/her central position in a network of cooperating people. The ability to participate in *Art Worlds* is presented as a matter of knowledge, and so the investigation of knowledge distribution is suggested to be an important point on the Institutional approach agenda (Ibid.: 2, 67)²⁴. Because art and art worlds are pretty much the same in this theory of art, any change on the later represents a change on the prior. Therefore, art is considered to be transformed by any conceptual or material change in art worlds: in production, institutions, distribution, associated personnel, technologies, audiences, etc. I suspect Becker's definition allows us to consider a flat tire on Guggenheim Director's car a change in art world and consequently a change in art. This a silly example illustrates how stretched his empty definition of art can be. Nevertheless, the institutional theory represents an important stimulus to ethnographic work among those who are connected to art in some way. It opened a path to the empirical investigation of these art worlds' dynamics, which can be a particularly interesting resource for the ones concerned with the relation between art and people²⁵.

24 Unfortunately Becker does not elaborate much on this idea of *knowledge* and integration in the art world(s). He surely suggests it in a way that resembles Bourdieu's capitals, referring himself to knowledge as a kind of resource to be used in order to become part of the art world(s) and work within, but he vaguely addresses the possible contents of it.

25ⁿ Actually, Becker himself had conducted empirical research on themes related to art and art worlds before writing his book. *Outsiders* (1963) is a delightful monograph on jazz musicians of Chicago, among whom Becker also played, back in the sixties. Though the research focused deviance, it surely was inspirational for *Art Worlds* as he refers jazz/music art worlds frequently throughout the text.

2. On the relative statuses of objects and humans in social processes

There is another axis of discussion emerging during the same period related to these general theories on materiality and art. As the relative importance of objects grew within social sciences' range of problems, an old metaphysical question regained impetus: the difference between people and artifacts as elements of social processes. Traditionally, for the obvious reasons, sociology and anthropology are focused on humans. Objects, whether natural or artefactual, are usually explained from the human standpoint – we understand them in terms of purpose, utility, appropriation, sometimes conditioning. Studying objects outside this scheme is uncommon because we do not see pertinence in doing that. Physics study matter, not social scientists. Indeed. However, some authors brought into question the difference between objects and humans in making social things happen, pointing that perhaps we should give them more credit. The relative importance of objects in social analysis of course varies. Take Malinowski's account on Kula (2002 [1922]). (As I said, anthropology has a long tradition of studying objects.) His attention to objects is great. Despite that, he still works them only in their [ritual] function, subsumed to humans' relations, as mere bonding instruments. It is not until the eighties that this issue becomes explicitly problematic and new proposals take shape.

Actor-network theory is Michel Callon's and Bruno Latour's [and their students'] antagonist reaction to meta-narratives on materiality prevailing in France at that time. In a way, it reflects post-structuralist concerns with particularity and/or specificity. ANT (the acronym) offers an original perspective on social processes by considering them as networks of humans and non-humans²⁶. Its piece de resistance is the scientific milieu, where one can easily understand how crucial objects and technology are in doing things (Latour; Woolgar, 1986). But ANT goes further and it states the no-primacy of humans over objects in these networks. Bruno Latour proposes the term *actants* to put them in the same stakes (Latour, 2004). Both humans and non-humans are regarded as agents, regardless of the lack of intentionality of the later. This is the most controversial aspect of ANT; I personally find it hardly plausible and feasible, but it is a challenging thought. The nineties brought us a much less known but perhaps more appealing solution for the query of objects' status in relation to humans: Alfred Gell's *Art and Agency* (1998). Compared to ANT, Gell's theory on art is far more generous to humans, and still it raises the bar for objects.

²⁶ANT works more as an analytical framework to dissect these networks than as an explanatory theory.

Art and agency is not a dissertation on the query of people and objects' relative position and statuses in social processes. Actually, it only addresses it implicitly, as one of Gell's premises on which he constructs a whole anthropological theory of art. *Art and agency* represents a deeply original and perhaps unfinished proposal²⁷. It is neither interpretationist, nor Marxist, not even institutionalist. The author's thesis is directed to the object of art, but it not especially concerned with meaning or form; it works on social relations, but not in terms of power or cooperation. Art is presented as a way to act upon the world, as a system of action observing an identifiable relational structure in which the object functions as a central term. Gell establishes a certain art nexus that shall explain every artistic object's existence and/or social efficacy. This nexus is characterized by four elements – index, artist, recipient and prototype –; these, with the exception of the index (the obligatory term), can be more or less present according to the situation. Relations between the terms can be appreciated according to agent-patient pairs of changeable properties. In view of Gell's exclusive attention to the agential art nexus, his approach is said to be *action-oriented* and *philistine*. These two characteristics are both the strength and weakness of *Art and Agency*: by establishing the art nexus, the author is able to pull a definition of art that really seems universal; on the other hand, it lacks specificity, as any material entity can potentially fulfill its requisites.

Despite its faults, Gell's art nexus is built on an interesting assumption on the relative position of humans and things, as I suggested. In order to explain objects' centrality in his theory of art as a system of action Gell introduces the key notion of secondary agency. Secondary agents differ from primary because they don't have intentions; and yet they affect the world as one of them. They do it by stirring the recipients to infer the existence of a third element, their cause, to which they relate in terms of extension. This logical process is called abduction, the abduction of agency. Despite its universality as a process, the particularities of the abduction of agency are learned and context dependent. So I may not be able to recognize an Indonesian sacred statue as god's manifestation; I will probably attribute its creation to an artisan whose intentions I am not sure of, but I will abduct something from it anyway.

Abduction of agency is crucial for understanding art as a system of action. Though Gell takes artistic objects as mediators, he conceives them as the ultimate term of the art nexus, the

²⁷ Gell was severely ill while writing it and never had time to review the final product; the book was published posthumously.

condition without which art, or the relations that define it, could not happen²⁸. Formulating secondary agency as a function of abduction has the interesting consequence of hinting at a sort of collapse between mind(s) and the physical world. Inspired by Marilyn Strathern's work on the notion of distributed person in Melanesia (1988), the author calls for the reconsideration of internalist and externalist theses on the attribution of agency. For him, neither intentionality nor social grammar and recognition alone explain the attributions of agency around the art nexus (by cognitive psychologists and social scientists, respectively). After all, mind can take place subjectively and objectively, within conscience and out there in the world, by virtue of participating in these indivisible relations of extension with its created objects, which on their turn are the *sine qua non* for art/action. The *oeuvre* can thus be considered as a succession of both material indexes and mental states. According to this formulation of the straight relation between people and objects, a person can be understood as a set of biographical events, memories, objects, etc, distributed in time and space.

All these different popular frameworks imply particular analytical apertures and constraints on the question of the relation between art and people. For the same reason, since I am convinced that they do not substitute each other, it was not my attempt to sketch a chronology or an evolution of the problem. The calls from interpretationists, marxists, institutionalists and gellians²⁹ seem to draw on complementary aspects of the same problem. And, as we can see, there is a lot going on here: communication, power relations, and patterns of action. During the second half of the twentieth century the realm of art is taken by social scientists as a field of inquiry, and the earlier strategies of explaining what art is through form are considerably replaced by functional accounts on what it does. Attention to artworks' contents is of course variable. The same happens to the basic presumptions on the role of materiality in human life.

Despite this plurality of accounts, there is something crosscutting about artistic objects: they are meaningful mediators of human relations. The meaningfulness of the artistic object draws on both its intrinsic formal properties and in collectively negotiated attributions; this is also the property that makes it able to affect peoples' lives – conceptually, emotionally, and very practically as a vehicle of distinction. Through perception, art has the ability to shake our

28 Cf. Morphy, 2009 for a critical comment on Gell's theory, namely on his insistence on the "active" centrality of artworks without looking at their semantic dimensions. Another immediate insufficiency of Gell's theory is that it only considers visual arts.

29 From the frameworks I mentioned, ANT is probably the only theory that appears incommensurable with the others, as a consequence of their presumptions on objects' agency.

ideas and emotions, to enchant us and/or challenge our comprehension. On the other way around, people also actively engage with it to act physically and symbolically upon the world. All through this relational game, artistic practice is expected to reinvent itself and artists keep looking for new forms, themes, purposes, technologies and media. In the next section we will close-up back on *Inside's* artworks and try to understand the peculiar way they played the role of meaningful mediators of human relations there. I will explore Jacques Rancière's thesis on aesthetics to understand how this can constitute a very particular kind of politics. I will also suggest links to the notion of truth and Foucault's problematization as a means to think through the dynamics of signification around *Inside's* artistic proposals. Despite the level of abstraction involved, the next chapter does not represent an attempt to theorize on the social functioning of art. Rather, it constitutes an effort to produce a comprehension on the very particular features of the relationship between art and people at *Inside*, aiming to extend the previously explored frameworks in a flexible and context-oriented manner. Let us call it "concept work".

Art as a Problematizing Activity: conceptual work

playing with conceptual tools in order to produce a comprehension on the relationship between art and the creation of problems

In the previous pages, we explored several theoretical perspectives on what art is in a collective sense. Whether defined by a particular nexus of agent-patient relations, pattern of action, way of communicating, and/or power structure, artistic objects always appear as meaningful mediators of human relations. As I suggested before, this meaningfulness of the artistic object draws on both its intrinsic formal properties and in collectively negotiated attributions, and that is the playground of the artist. Ultimately, artists are synthesizers, they work on the combination of these two poles – sensorial and conceptual – to provoke their audience. This provocation can be highly emotional, logical, or both. Though we tend to put too much emphasis on the loneliness of artistic practice, the fact is that no message or interpretation falls outside the social fabric. The great thing about being aware of it is to realize that the way a specific work is produced and received by people is a watermark of this same fabric and that it can be a clue for other inter-related social themes. Some very interesting accounts on the historical specificities of taste, beauty, or even politics and economics (Cf. Umberto Eco on beauty, and T. J. Clark (1999)) started from this premise. Here, I am using a similar strategy to grasp something slightly different: the impact in our lives of recent developments in biotechnosciences.

Artworks can result from multiple purposes and accomplish them through different means. Some pieces are shocking; others awe, inspiring, troubling, etc. In order to provoke these different reactions, the artist combines more or less recognizable elements; he/she works on a shared code and takes advantage of it. “Taking advantage of it” may sound a quite machiavelic way of putting artistic practice. This is not exactly what I mean. The thing is that artists are no more opportunistic than we are during any chitchat. It is all about communication, or intersubjectivity. With the exception of the ones creating only for themselves³⁰, artists are players in this social game of senses and notions, displaying and concealing combinations of elements so that they can come up with something.

30 Err.. Who?

Jacques Rancière, the French philosopher, interprets this dynamics of displaying and concealing as politics, or what he calls “the politics of aesthetics”. According to the author – who worked quite dispersedly on this issue in short articles, essays and interviews (Rancière, 2006) –, aesthetics holds a politics of its own by virtue of playing with presence and absence of stimuli. His thesis is simple and creative. At the very core of such politics is the notion of “distribution of the sensible”. That is to say that aesthetics, of which artistic practices are a part of, concerns the distribution of what is available and not for people to perceive.

“Artistic practices are ‘ways of doing and making that intervene in the general distribution of ways of doing and making as well as in the relationships they maintain to modes of being and forms of visibility.’ (Ibid.: 13).

The notion of “distribution of the sensible” recalls us that the field of what one can and cannot sensibly acknowledge is not free of conflict, dispute, negotiation, or construction. Different agents in different milieux framed by particular power structures shape dynamics of displaying and concealing in the same way it happens with discourse production. In art, as well as in any other aesthetic practice, agents deal with these variable geometries of what is allowed and forbidden, of what is possible and impossible to do, of what will bring up praise or resistance. This chapter is an attempt to produce a comprehension on the artworks' dynamics of signification operating in *Inside* from some of its artists' aesthetic choices, and concept work.

Borrowing the Foucauldian notion of “problematization” – which addresses the range of practices taking part in the emergence of a problem –, my suggestion is that art can be thought of as a problematizing activity. Michel Foucault says about problematization that it “does not mean the representation of a preexistent object nor the creation through discourse of an object that did not exist. *It is the ensemble of discursive and nondiscursive practices that make something enter into the play of true and false and constitute it as an object of thought* (whether in the form of moral reflection, scientific knowledge, political analysis, etc)” (Foucault quoted from Rabinow, 2003: 18, my emphasis). The following pages represent an essayistic effort to extend the previous chapter's literature review on the relation between art and people, bringing to discussion the particular case of some of *Inside*'s most memorable pieces.

1. *the ensemble of discursive and nondiscursive practices*

One very interesting finding from the interviews and drawing exercises I conducted at *Inside* was that the most remarkable and memorable objects were usually the ones which downplayed the importance of creating new things to amaze, or to provoke some sort of pleasant aesthetic experience, in favor of raising awareness and critique. These were artworks that shook peoples' comfort zones and often shocked them to the point of bringing to their attention non-ordinary issues that would suddenly become important within that context. Pieces such as Suzzane Anker's "Culturing Life", or "Natural History of the Enigma" by Kac, for instance, caused a lot of discomfort and questioning about the ethical limits of artistic and scientific practices, especially when living beings are the media to work with.

In the first case, the bizarre embryos sculptures hanged on the wall contributed substantially for emotional impact, suggesting the monstrous side of eugenics and the possible misuses of biotechnology. The normal creature contrasted with the fishy and the geometric ones under the bright light; all were silver and cleanly shaped evoking scientific precision. In the second case, the Edunia's red veins were the great contributors for the installation's dramatic effect. Because the flower – a small fragile blossom – was introduced as a *plantimal*, or as a "new life form" created by Kac from his genes and Petunia's, people would think of the redness as human blood.

"The central work in the "Natural History of the Enigma" series is a plantimal, a new life form I created and that I call "Edunia", a genetically-engineered flower that is a hybrid of myself and Petunia. The Edunia expresses my DNA exclusively in its red veins." (Kac quoted from *Inside's* free guide)

Despite having a giant red sculpture of a protein displayed in the middle of the room, Kac's installation was remembered for the biological promiscuity it represented. But the truth is that Kac did not insert in the flower the gene for hemoglobin, which is the protein responsible for human blood's red pigment. Instead, Edunia had his immunoglobulin gene inserted, which produces IgG protein, a type of antibody that has nothing to do with the redness. Therefore, Edunia's red petals were natural. Yet, he did attach the IgG gene to a plant gene promoter for a gene that is only expressed in the veins of the plant. So basically, Kac took a red flower and got its veins to make his own IgG protein.

No one could understand this process only by reading the short description in the free guide. The catalogue's extended section on the "Natural History of the Enigma" was also not very

insightful. The first impression you would always get is that Edunia had some sort of human blood running in its veins. Only a careful reading of the artist's website shows that this is not true at all (Kac, [n.d.]).

I am pretty sure the author anticipated this effect. He knew people would think of the redness as blood, human blood. In the catalogue, Kac has a totally misleading paragraph about the combination of human and plant DNA in a new flower where he calls it “visually dramatic” (Kac from Moura, 2009: 140). His short introduction in the free guide is quite astucious too. Note that he says “The Edunia expresses my DNA exclusively in its red veins.”, which is neither completely true nor false. This strikes me as a very obscure way to explain what is going on in Edunia, biologically speaking.

I am not passing judgments on these artists' aesthetic and discursive options. Rather, my aim is to emphasize the manipulation of sensorial and conceptual codes by artists in order to provoke particular reactions. Suzzane Anker and Eduardo Kac are two cases from the twenty-two present at *Inside*. Of course, some artworks handle this game of displaying and concealing more interestingly than others. Because Kac's case is so clever and sophisticatedly orchestrated, it turned out to be absolutely intriguing and enlightening about artistic practice to me. After all, it was just a natural small red blossom with a slightly reinforced immune system.

Artistic practice is then composed by discursive and non-discursive elements which are combined in order to produce some kind of reaction in the audience. This combination, operated by the artists, happens in the realm of constraints and possibilities of senses and concepts. It is from this point of departure that artists act upon the distribution of the sensible. By showing, hiding, and deluding, artists play a very special political role. Whether artists' intentions are easily conveyed or not – the delivery of Kac's message on the contiguity of species was not as successful as Anker's questioning on eugenics, I must say –, artworks are always there to stir and challenge our understanding.

2. that make something enter into the play of true and false

Foucault's problematization has an immediate translation to bureaucratic, academic, and religious expertise practices that does not apply to art – not at least without some resistance. I

find this second part of problematization's definition the trickiest to follow. To ask “what does count as true and false in art?” sounds silly. But then, what about religious practices? Is it clear what counts as true and false in them? And considering Niklas Luhmann's lessons on the ecology of ignorance (Luhmann, 1998)³¹ of social expertise: what about bureaucrats? Perhaps asking what counts as true and false in artistic practices does not sound sillier than it does for the work of priests and brokers. This is because the play of true and false does not necessarily bear on “truth in itself” (whatever that means), but in versions of what it may be like and their relative power to be imposed and/or become compelling. The play of true and false is present in these arenas as politics. Yet, these are politics with their own particularities; we should not expect them to observe the same codes and expectations, as they do not dispute the same truths and do not verify them by the same means³². If scientific truths are dependent on reproducibility and peer-approval, and religious truths are supernaturally legitimized, where does artistic truth come from? What is it? Which power dynamics does it observe?

Modernity seems to inaugurate a new interesting relation between art and truth. This new relation draws on both the advent of the aesthetic regime – and the rupture with representation as a primary mode of artistic practice it represents –, and on a sort of cultural shift from collectivity to individuality, which translates into more self-centered ethoses. Until then, art was pretty much about depiction and technique mastering and thus it was conceived as a natural fake, an imitation or a poetic mimesis of the [true] world (Cf. Plato). Once freed from this representational purpose and specific ways of doing, art turned into a singularity defined by a particular sensible mode. These conditions opened room for art to pursue truth, or to have a truth of its own, rather than illustrating it.

Concurrently, by the beginning of the twentieth-century, a new ethos seems to have impregnated europeans, an ethos of authenticity. According to Leonel Trilling, sincerity, or the demand of truthfulness to others, is substituted by authenticity in western moral life since the Romantic period. The conduct of authenticity can be defined as a prescription to “stay true to oneself” and it appears particularly important within the art world(s) of the 1900s, as

31 According to Luhmann, the role of experts is not to predict the future, but to promote communication about the unknown: “[t]he intensity of ecological communication is based on ignorance. That the future is unknowable is expressed in the present as communication. Society is irritated but has only one way to react to its irritation, in its own manner of operation: communication.” (1998: 78).

32 Under the parallel, an inescapable question arises: are artists experts? On what? If their code is ‘the sentient’, are they experts on perception? Don’t we train our fine artists to become masters on the use of certain materials to affect peoples’ senses and perception? The complexities of the “art worlds” and the acknowledgment of the institutional theory’s pertinence prevent me from answering these questions lightly.

the constitution of the modern art built much on the quest for new emotions and ways of self-expression.

“Acaso se conteste que la nuestra es una época propicia a entusiasmarse por todo lo que suponga exotismo, rareza, novedad o retorno a lo primitivo, ya se rate del arte oriental o negro, o de simples dibujos infantiles. (...) buscamos las emociones violentas (...) poseídos, como lo estamos, de una voluntad de claridad ilimitada.” (Karl Jaspers, 1956 [1922]: 271-273)

In a six-page essay from 1922, “La Esquizofrenia y la cultura actual”, Karl Jaspers (1956) writes about this quest for new emotions and expressivities that he considers to characterize his epoch. *Las emociones violentas*, the violent emotions, *poseídos, como lo estamos, de una voluntad de claridad ilimitada*, possessed as we are by a desire of unlimited clarity, he declares. Jaspers gives a critical look at the twenties’ fascination with the exoticism of blacks, children and mad people, which he interprets as the last western bastion of *authenticity* in an increasingly artificial and mercantilist world. Jaspers is clearly referring himself to the avant-garde art scene, non-surprisingly to Cubism and to the still embryonic Surrealist movement.

As a path to interiority, art soon becomes a privileged engagement with authenticity, celebrating the quest for the true oneself. As aesthetic self-expression, or the exteriorization of this inner truth, art becomes a language of critique of the twentieth-century western world. This critique mood has multiple manifestations and constitutes one of the main sources of indignation towards the bourgeois ethos and the capitalist system during the twentieth century³³. Against oppression and disenchantment³⁴, against alienation and artificialization³⁵, or the opposite, towards the total mastering of technology by man³⁶: these are some of the artistic critical tropes we can find from the avant-garde movement on, all of them showing commitment to particular visions of good life, future and/or humanity. This is the kind of truth art has to offer since modernity has started: revelatory, mythically legitimized by the human heart or the inner journey.

33 See Heinich, 1996 for the critique of bourgeois philistinism by avant-garde movement in the early 20thC, and Luc Boltanski & Eve Chiapello (2005) for the importance of this artistic mood in the constitution of two from the four essential modes of critique of capitalism until today (against disenchantment and oppression).

34 Epitomized by the aestheticization of marginality that runs from the late Romanticism until nowadays. One can say that it gains particular relevance within the art world(s) after early avant-garde's fascination with African art and the primitive life, with dreams and inner journeys, the curiosity for Art Brut as it was proposed by Jean Dubuffet, etc. Take madness for instance, the expressionists’ locus of creative singularity, surrealists’ metaphor for freedom, and Dubuffet’s ideal state of aculturality from which he could extract *true art* (his expression).

35 Cf. Benjamin's comments on the politicization of art and Dadaism as an “instrument of ballistics” against distraction (Benjamin, 1969)

36 Cf. Futurists; 60s california

Like an illuminated coming back from a serious diving into the self, art has brought us all these different visions and claims about expressivity, inner states, human condition, feelings and thoughts, political projects, and so forth. Sometimes they can be folly, absurd, or wicked, but the fact is that these claims have a different status from the citizen's political proposal, for instance. It is not like they are not taken seriously, but they represent something else, they are about creativity, about stretching limits, and not necessarily guided by feasibility or reasonableness. They are an exercise of freedom and imagination. This is the realm of the play of true and false, and of truth-making by art.

Because art as we regard it today does not need justification, because it bears in itself (Cf. Vattimo's *Art's Claim to Truth* and his account on Heidegger's writings on Aesthetics and the theoretical onset of the ontological bearing of art), one can say that it always creates truth, and nothing else. Take for instance works like Kac's blossom, which despite being an objective lie still stands as art. In this sense, as art's truthfulness is an a priori, there is no room for the play of true and false. At this level, art, if it is art, is always already verified by authenticity, by a sine qua non of self-transparency – or so we tend to think. However, there is another way to approach the question of veracity in art, which relates to its message and form. Assertions made through art can be questioned, and so can be the means employed to achieve signification.

“What we can see in here can be deceitful to the less well-educated. Everything can be manipulated by the artist to give it color, to change its size ... There's always a notion of veracity involved.” (60 years old, retired engineer)

This is probably the sense that more interestingly describes truth-making at *Inside*.

As you may guess from my description in the previous section, *Inside* supported a particular vision on the future of art – remember it named Art and Science “the art of the 21st century”. Though the majority of the artists represented there were critical about scientific practices, none of them discarded the vision of a highly technologically-determined human destiny, nor truly deconstructed it. Rather, they would emphasize the newness of biotechnology, the great dangers and marvelous possibilities of it and the coming of a new age, often in a very prophetic style. To me, and surely to most of my interviewees, this constituted the exhibition's realm of play on the true and false. A great part of peoples' questioning was directed to the desirability of such an art and of such a future. Some visitors also did question

the artistic quality and status of those objects. Yet, the true and false game was mostly played at the level of this proposals on the future of humankind. The viability and desirability of a fully-developed, unrestricted and omnipresent science is the topic that is likely to synthesize all my interviewees discomfited testimonies on the experience of *Inside: Art and Science*. That was the topic that those artworks were repeatedly bringing to thought.

3. and constitute it as an object of thought

Artistic practice can therefore be interpreted as a creative combination of elements that involve some kind of aesthetic option on how to display a particular idea or feeling. Ultimately, the artistic object is in itself a particular way of displaying and concealing, of manipulating language in order to agitate people. This agitation can sometimes be self-questioning on unexpected issues, and art can contribute to the emergence of new problems, bringing forth to thought new imagined realities, for instance, that would not be considered by people otherwise. Whenever this is the case, art is working as a problematizing activity.

Both Anker's "Culturing Life" and Kac's "Natural History of the Enigma" exemplify how art can trigger problematization in its very non-innocent political way. By playing with peoples' fears on eugenics, trust on science and disgust of monstrous, Anker's design babies took the question of human genetic manipulation beyond the utilitarianism that always appear to legitimize it, offering a vision of transformation as reduced to aesthetics, following only formal objectives. Kac's *Edunia* did it on the idea of genetically crossing species, and of artistic freedom – even though his aim was to raise conscience on the contiguity between living entities. A tricky use of words and of the flower's natural properties was enough to imprint total puzzlement and discomfort in the visitors, suggesting a blossom with blood running in its veins.

It is hard to say whether these reactions were emotional, ethical, political, etc. The two artists clearly had an affective strategy that helped them to make their point, speaking not only to the brain, but also to the heart. That is why these pieces were so frequently remembered by visitors during the interviews and frequently highlighted in the drawing exercises. According to some psychologists, art has usually more impact when "it makes the thinking part of the brain talk to the feeling part" (Thompson, 2008: 6). Maybe this was the case, or perhaps the opposite, as you usually cannot distinguish between senses and sense, simply because they

are inextricably and mutually dependent: ultimately, we all tend to rationalize troubling experiences, including the ones that draw on the trouble of stimuli. Either way, bringing to senses and bringing to thought may not be that different.

Emotional affect is thus likely to be an important catalyst of problematization through artistic experience. If we consider a collective notion of affect – we can say that affect “characterizes the way in which a relational field is structured such that a specific type of disposition is likely to be generated” as a definition (*Bios-Technika*, [n.d.]) –, we can grasp a little more of how artists make their aesthetic choices. At last, as the point is also to play with this affective structure, we can think of artistic practice as a meaningful exploration of shared emotional grounds and their limits. Acceptances and resistances to an artwork can hint at this structure configuration and tell us something about our comfort zones concerning all sorts of themes. For Suzzane Anker, Eduardo Kac and the majority of the artists represented at *Inside*, these themes were usually future, nature, and artistic practice. An all-encompassing highly-technologized future, where even art is “scientific”, and an entirely malleable environment constituted recurrent problems to be questioned by visitors after confronted with *Inside's* objects. The experience of *Inside* would make the people I spoke to problematize these issues, sometimes thinking of them for the first time in their lives without me asking about them at all. The reactions were ambiguous, sometimes contradictory and unarticulated, but the issues were there. Some visitors even promised to investigate more about Art and Science once they got home, so they could have a well-informed opinion.

Peeking through the keyhole: essay work

cultural analysis and critical comment on the problematization of particular issues at Inside by artists and visitors, namely of future and nature

In its very thought-and-emotionally provocative style, *Inside* proved to be the opportunity for many to think critically about issues concerning art, science and technology that would not have been considered otherwise. In the end, attending the exhibition constituted a reflective experience with aesthetic, ethical and political dimensions which were hard to isolate from each other. Aesthetically, *Inside* represented the exploration of “not beautiful art” (as one of the interviewees called it), of art made of unexpected media through unorthodox artistic techniques. Ethically, sometimes morally, the exhibition played with the use of technique to readapt the environment for human purposes, bringing artistic freedom, technological development and utilitarianism to interrogation. Politically, because it tended to exacerbate the imaginary of free experimentation, the exhibition exposed the angsts of having no direction or no specific political project to follow, of having no consensus on human flourishing and its relation to artistic and scientific practices, thus revealing a sort of discursive and reflective vacuum around the potential future uses of biotech. A crucial question echoed across visions and opinions of artists, visitors, staff and myself: should we do it just because we can?

I will not put to consideration the clash between ethics and aesthetics here. The issue is older and more profoundly discussed than the recent hype around it makes it look like (Stracey, 2009), and it would take me more than a masters' thesis to handle it properly. Nevertheless, it is important to stress that crossings of the kind advanced by *Inside* easily reignite this debate, as they tend to deal with very sensitive topics. This sensitiveness is on the basis of the irritations I stressed above³⁷. This almost sentient feature is what ties up the different dimensions of *Inside's* experience. Aesthetics, ethics and politics were not perceived separately, they were not discrete quanta offered by artists to be scrutinized by visitors. Instead, they were bounded and synthesized by irritation – made of stir, of shock, of pleasure, etc. Irritation, queasiness, discomfort, ..., any feeling of uneasiness will do to describe this

37 “Irritations I”, chapter [Thinking Inside](#)

first moment of animation or initial contact. Despite the different versions on what is right and wrong to do, on what future should we pursue for humanity, on the reasons why those objects were art or not, despite all that diversity, this first moment of animation observed the extraordinary exactitude and consistency of ringing always for the same artworks and issues – life's manipulation through biotechnology, animal rights, and environment (two maybe three of the six general axes of critique I proposed as summarizing the artistic critical discourses at *Inside*, you may recall). Like a thermostat, irritation – which is neither disagreement nor necessarily disapproval, it is just the contrary of indifference, it is disturbance and perturbation, agitation, startle – happened whenever the situation fell outside of pre-known comfort zones, whenever the proposal was too unexpected by the self to be handled with a set of prepared solutions or axioms. The coherent repetition of the thermostat ringing suggests culture, I am afraid to say. It points at the edge of custom. It hints at the grey zone of alternative(s), of what is yet to ponder, even if it will never be exhaustively pondered because of impertinence or atavism or chance.

Art necessarily favors choice and freedom because it forces reality to possibility. In art I see such a privileged field to work on problematization because of that. As the irritations at *Inside* succeeded, remarkably consistent, over and over again, I felt like repeatedly gazing at the emergence of problems, at that primal aboriginal moment of discomfort that precedes systemic thought, explanation and appropriation that applies to both individuals and collectives.

The fascinating part of *Inside's* problematization dynamics does not depend on whether its emergent problems will become established in the future as major concerns regarding artistic and scientific practices or not. The difference between the two possibilities may well be one of scale, interest and mobilization. Or of chance. Despite its sometimes futuristic contents, problematization surely tells us more about the present than it does about the future. A present at motion, though, in transformation, as I see it. A present in which stability is defied by the introduction of new modes of biological production that demand appreciation, appropriation, and definition when displayed as they were by Art and Science at *Inside*.

1. Irritations II: interpretation and critical comment

Up until now, I have been arguing that *Inside* had some kind of dynamics of signification, that it irritated people about specific topics, thus that it constituted a particular situation characterized by peculiar problematizing experiences with aesthetic, ethic and political dimensions. A naïve conclusive interpretation of my last words could be: “well done, the artists' mission of raising awareness on science and technology was accomplished, thesis over”. The truth is that there is nothing wrong with this remark. Nevertheless, I cannot endorse it, since to say that those artists' mission was accomplished can be a true, false, interesting and uninteresting point to make at the same time – it is only a matter of perspective. First of all, visual artworks do not aspire to linear knowledge, narrative language, and or accurate communication of clear ideas, hence I see no interest in making the point of “accomplishment”, at least not in the sense of victory or success that it may imply, as if artworks' quality is a question of achieving direct manipulation of audiences' minds by artists. On the other way around, though *Inside* appeared to start new reflections on art, science and technology among the visitors I spoke with – and that is the sense in which the remark above is true –, the qualities of those reflections did not axiomatically coincide with the artists' intended debates. And that was what made irritations interesting to study: the way they deviated from the artists' general pattern of concerns, showing that not all people care about the same, and that some topics are indeed more sensible than others, as some of them tended to be more often highlighted.

I think it is fair to assert that artists at *Inside* shared an overall enthusiasm with science and technology that visitors did not. Despite their aim of raising awareness to it, they were hardly harsh on their visions of a scientificized future. The art of the 21st century they proposed was quite free of trouble and the dystopian versions of it were under-represented. Even so, according to the catalogue and other sources, they were trying to pass critique on a set of technoscience-related practices with their artworks, as I summarized in the artists' six general axes of critique. From those six general axes, some topics stood out in the visitors' pattern of irritations – environment, manipulating life through ever-improving biotech, and animal rights. Despite the positive viewpoint that many artists passed on the potentialities of biotechnology – the beautifulness of Kac's transgenic flower, the practical advantages of Stelarc's third ear and of Philip Ross hidroponic technique, etc –, people usually commented on the relationship between art and science ambiguously, following a very cautious attitude.

This cautious attitude was often disarticulated and full of contradiction, hesitant between the desire for a more art and the fear of what the future holds. Because of that, the experience of *Inside* gravitated around the play on the truthfulness and desirability of the future of art proposed by the exhibition. The themes of “future” and “nature” were two axial components of this experience, constituting key elements in the dynamics of problematization at *Inside*.

1.1 Future: The shape of art to come?

“It is the artist who must break the already crystallized habits which make us see in the present tense those institutions and customs which are already out of date. To provide a true image of our time, *he must consider it from the pinnacle of the future* which it is creating since it is tomorrow which will decide today's truth. (...) *It releases our future possibilities*, and in one move it follows, accompanies and precedes the dialectical progression of history. (...) *But this is not some sort of prophetic gift: the contradictions and conflicts of the era stimulate them to the point of bestowing upon them a sort of double vision. Thus it is true that a work of art is at the same time an individual achievement and a social fact.*” (Sartre, 1964: 219-220, my emphasis)

There was an interesting discourse underlying most of *Inside's* artistic proposals: that, somehow, those artworks anticipated the future now, bringing forth a new conception and way of doing art that might become mainstream in the years to come. Thus, *Inside* enacted a particular vision on the what the future might be like, a vision that is akin to liberal ideologies of progress (Weissmann, 1998) and of technoscientific shape of culture in its broadest sense. This is a rather curious strategy of self-framing and legitimation, if one considers that those artists and their work belong to the present tense, exploring and displaying now the supposed future to come. Hence, artworks at *Inside* hint at the ways we currently imagine future, more than at future per se.

If artists are future-makers, they do it through exploration of alternatives, and not through prophecy. This is the less naïve way to put the relationship between artistic practice and future I found, and I borrowed it from Jean-Paul Sartre in the quote above. Previously, I described Rancière's notion of politics of aesthetics as the interference with the distribution of the sensible and I called attention to how art constitutes a special case of aesthetics. In art, the game of displaying and concealing has to meet the attempt of imagining and bringing to senses unexpected and original works; this makes of artistic practice a permanent struggle against what is already established. That is the sense in which Sartre speaks of artists some

sort of “future makers”. Regardless of working on past or future motives, or on no temporal motives at all, artists expand our ways of perceptually engaging with reality, and so they have the power to reveal the unconsidered, the yet-to-ponder versions of materiality, anticipating alternative uses of it. As Sartre puts it, the artist *releases our future possibilities*, entangled as s/he is between the self and the stimuli s/he receives from the environment, making use of knowledge on forms and concepts to create something interesting and enter dialogue.

But as *Inside* built on a relatively coherent vision of what the future might be like, it released a very particular set of future possibilities, i.e. it did it at expenses of considering the alternative alternatives, or the paths beyond the almost-pastoral technoscientificization of the world that it suggested. Together, environment, animal rights, biotechnology, artificial intelligence and surveillance do not exhaust the arenas of possible great transformation due to technoscientific advancement for the next decades. They do not constitute the sole and only arenas to be reflected and ethically and politically improved through public debate. For instance, telecommunications and connectivity, which are steadily developing, bringing novelty every year at an incredible pace, were oddly absent at *Inside*. The same for architecture and built environment, themes which still fruitfully encourage the crossing of art with science, producing numerous creative solutions for more comfortable but also sustainable and eco-friendly lifestyles. Robotics was another strangely underrepresented field, only represented by the works of Bill Vorn, Leonel Moura, and quite insipidly by Ken Rinaldo, though it inspired much of the great sci-fi produced during the second-half of the twentieth-century³⁸, when bottom-up design was not yet the promise and hype it is today (Cf. swarm robotics, for instance). Despite their present pertinence, these issues were not covered by the artists' concerns and aesthetic explorations.

Quoting the couple Marta de Menezes and Luís Graça, “It is interesting to note that biotechnology is now replacing computers at the heart of society's expectations and fears” (Menezes; Graça, 2007: 23). *Inside: Art and Science* exhibits this shift. Not only the discussions started by artists on their artwork represented only a small part of the overall questions currently raised by scientific practice and technological development, they also were pretty convergent in their vision of auspicious and necessary biotechnological progress.

38 I am thinking of the popular work of Isaac Asimov, Ridley Scott on Philip K. Dick, Kubrick, and Stanislaw Lem, for instance.

Visitors were rarely unaware and uncritical of this inclination. Quite the contrary, they were actually reactive to the impression of auspiciousness conveyed by the exhibition when speaking and drawing to me, expressing words and signs of discomfort and sometimes of disgust and disapproval. Their appreciations on a highly-technoscientificized future were ambiguous as they were often divided between the belief in the benefits of technological progress – especially in what concerns health care – and the certainty that that is not its only by-product. People were thus skeptic about a potential golden age to be inaugurated by biotechnosciences where humans and other living beings can live happily together, harmonized and unified by technology, deliberately adapted to each other for the sake of flourishing. Technopastoral dreams were not a part of *Inside's* experience. The prosthetic advantages of an ear on arm were hardly understood, the *plantimal* was never taken as a celebration of human-flower biological contiguity and shared matrix, ORLAN's facial transformations were more commented as an ode to freakishness than they were as a call for tolerance towards diversity, and few were the interviewees finding Catts and Zurr's treatment of semi-living objects something ethically relevant. So, if *Inside: Art and Science* rarely displayed the potential harmfulness of biotechnoscience, people would make sure that I would not miss that possibility.

But then, surprisingly enough, the great majority of the people disagreed with my proposal of regulating such artistic practices dealing with scientific knowledge and techniques, or just abstained from saying that art should observe some kind of ethical pre-established rules. Several common known arguments conflicted with the initial fears and discomforts triggered by *Inside's* experience, and particularly by its proposal on the future of art and human life; I shall sketch them:

- i. that ethics is a matter of individual reflection and choice, and as such it shall not be imposed by a third party;
- ii. that art can bring benefits to the technoscientific project by virtue of experimenting freely and not being constrained by ideals of utility and function, thus opening ground for creative leaps in research;
- iii. that art must follow progress and become modernized, and that its crossing with science and technology constitutes an essential requirement for that to happen;

iv. that art is for its own sake, therefore it should not be guided by any particular function, namely ethical or moral, being external to these kinds of judgements.

Paradoxically, people would rather defend a potentially destructive set of practices – or so they firstly appeared to their eyes – than condemn, question or deeply debate them for the sake of honorable principles such as preserving freedom and individuality. Like readymades, automatic and short, these aphorisms were invoked in their pocket-version, though; and, unfortunately, the kind of interview I conducted at *Inside* did not allow me to understand how further people could go with their reflections on this conflict.

Inside's experience was then full of this kind of ambiguousness and mixed feelings that were particularly hard to articulate. It was definitely difficult for visitors to build up an opinion in six-seven minutes that avoided the messiness of evoking concurrent opposed principles regarding the pros and cons of having artistic and scientific practices merged in the future, and so they were often self-contradictory in their testimonies.

The way some made sense of irritation and inconsistency was even more interesting and it suggested a particular disposition regarding technoscientific progress with important political implications. For repeated times I heard things like “but I am probably too old to understand it”, or “it will be more easily accepted by the future generations”, as if the discomfort felt at *Inside* did draw on a generational gap or cultural maladjustment. Despite all the uneasiness about the technopastoral picture given by artists, visitors would not critically address the ideological project on progress that it assumed. As for artists, visitors too tended to believe in the inevitability and necessity of technological progress, and to reproduce the idea that something profound is about to happen in society due technoscientific development. But this is the story of a future that has not quite arrived yet, that it is still slightly far, slightly covered in mist, which is near enough to be envisioned, but distant enough to justify lack of commitment and an apathetic attitude.

The crossings of art, science and technology displayed at *Inside* appeared too incipient, clandestine and contained to constitute a significant or preoccupying actualization of this virtual unsought future. This feeling of distance was responsible for downplaying the need for taking a stand on the issues involved, and for the postponement of commitment. Artists were also playing with this feeling when they let Leonel Moura advertise their artwork as the art of the 21st century, or as the archetypes of a new revolutionary paradigm, or even when they

wrote about it as if they were auguring the coming up aesthetics. The irony is that not only does the 21st century have already ten years, but Art and Science is happening now, in the present tense, and perhaps for a period longer than that one decade (see Overture). *Inside* did not presented the shape of art to come, but the shape of art that is according to a particular vision of what it might come. Another irony is that this emphasis on the *future*, this critical positioning and permanent problematization of it, is likely to have some perverse effects: on one hand, it surely fosters debate on what is there to come and on the trails of artistic and scientific practices, but on the other, quite absurdly, it also defers responsibility for it to younger generations by increasing the feeling of distance. Despite the artists' efforts of improving reflexivity and public participation in scientific practice and decision, my guess is that their use of the notion of future may well have inhibited and discouraged that.

1.2 Nature: How to care it modernly?

Only a portion of the artworks displayed at *Inside* had a direct relationship to living entities and natural environment; and from these, just a small number involved biotechnology, or used living matter as art medium. Nevertheless, the most frequent irritations I detected had to do with topics such as environmental protection, animal experimentation and the use of biotechnology in artistic practice. As I stressed before, though I was expecting disturbance about some more edgy artworks – Stelarc's, ORLAN's and Kac's, perhaps –, in the end I was surprised by the characteristics of the audience that was actually getting disturbed. Given that a great part of my interviewees and amateur drawers had higher education in Biological Sciences and other significant part in Arts, I would guess that it would be unlikely to collect so many words of discomfort regarding BioArt, since these people were probably familiar with the techniques and procedures it involves, and also with some of its outcomes. And in fact, many visitors said they knew about these artistic practices before attending the exhibition, and some of them even went there on purpose to enjoy particular pieces – mostly the Stelarc's “Ear on Arm”, which had been advertised in magazines, posters, and cultural agendas right before the exhibition started. Yet, they still got perplexed and sometimes deeply discomforted with some of *Inside's* contents.

It was not like *Inside's* artistic proposals were too daring and cutting-edge in the way they used science and technology. What they did was to suggest a particular perspective on the

future of art inspired by an ideology of progress that has been conducting the project of modernity since at least the 19th century (Berman, 1982; Habermas, 2006; Weber, 2001), a perspective which emphasizes *the crossing of boundaries of competence* between artists and scientists – and that is what was really daring about Art and Science at *Inside*, and shocking, and irritating in the way I interpret it. Because there was nothing incredibly new and outstanding concerning the use of biotechnology and living matter in the exhibition. Nothing that my interviewees had not surely had seen before – in their labs, in their ateliers, in other exhibitions, art fairs and catalogues. What artworks such as the third ear, the genetic engineered mice, ORLAN's facial transformations, Anker's sculptures, and so forth did was to apply to artistic practice the common sense conviction that the world's technoscientificization is unstoppable and to show – to literally show, by doing it, by experimenting and releasing the possibility – what this can mean. As a synonym of progress and development, science and technology becomes the hallmark of art's modernization inside those rooms.

To point out science and technology as symbols of modernization is not per se an incredible distinctive feature of art at *Inside*, neither it is the simple use of their knowledge and techniques by artists. Other artists have done it before, and Futurism is a good early example of the use of this rhetoric. Yet, there is something about the crossings of art with science today that keeps them critical and perhaps more irritating, or discomforting than ever. From the data I collected, my guess is that biotechnology is playing this role of increasing the potential discomfort towards the existence of artists occupying the traditional spaces of the scientist. At *Inside*, I felt that this happened because visitors were thinking of the substrate of biotechnology – the bio, living matter, or “nature” as it was often addressed – in a very particular way that does not conform the principles of artistic freedom and modernization they were also endorsing.

Recall what was said about artistic intervention over living matter: that nature should not be disturbed because it has its own dynamics; that some BioArt was like playing god and that it was intrusive of natural perfection; that art as it was presented at *Inside* suggested the future endangerment of species integrity; that artists should not behave as wizard's apprentices; etc. How come can we still argue that nature is something distinct from human affairs twelve thousand years after the beginning of animal and plant domestication? Of course none of my interviewees was that obtuse; no one said that nature was totally immaculate, or pristine, to the point of negating the obvious which is that we are using technology to shape the natural

world for so many time now that nature can no longer be understood dialectically with artificiality. There is no such distinction. At least not in the absolute terms of telling the “human-made”, or “human-modified”, from its opposite (or at least not in the planet Earth). Yet, they would keep talking about “nature's manipulation” as some sort of violation, sometimes necessary but always transgressive, and as an issue way too important to be handled carelessly.

According to Robert Lenoble, there are two main traditions in Western thought competing for the definition of “nature”: one that comes from Platonic Idealism, which put together and popularized the idea of mother-nature, protective and perfect, and another that starts with Epicurean Materialism, which was responsible for a more dehumanized version of nature, devoid of purpose and meaning (Lenoble, 1990). I am not a big fan of such loose genealogies, and I don't mean to use it as a descriptive model for the different notions of nature that are available in the world³⁹. However, there is an interesting long-running thesis about the substitution of the first tradition by the second throughout the last couple of centuries due to rationalization, secularization, and scientific development, that I find highly plausible despite some notable exceptions already diligently and ably analyzed by sociologists and anthropologists. The curious thing is that, if we look at the visitors testimonies and drawings, we can tell that the two poles of nature's meaning are present in the exhibition at the same time. Nature as invoked there depended on both the acknowledgement of its mechanical qualities and manipulability, and the consideration of its very distinctive ontological status that confers it a sort of righteousness of its own. The presence of this second pole in people's comments struck me a bit, also because of the general characteristics of the audience that I already pointed out. However, if it is true that there was some platonism on this issue among *Inside's* visitors, it is also important to notice that the attitude of admiration appeared transformed into care. Instead of being protective of us, nature has now to be protected by and from us. This necessity of protecting nature of our harmful mistakes – which has been enabled particularly by technology and unsustainable lifestyles – constituted an important ethics for a good part of these people, an ethics of care towards a reified distinct and endangered nature.

But then, what was to care of nature? What could that possibly mean for those thirty people? All the need for caution when calling upon the pros and cons of biotechnology was

39 Cf. Helmreich, 2000 for an alternative and probably unexpected reading of what nature and life may mean

symptomatic of people's wish for some kind of legitimacy concerning the “nature's manipulation”. With all the urge for modernization, a way to care of nature is to assure the observance of some rules of purpose and utility when intervening on it, so that “nature's manipulation” can be justified and it does not run randomly and “irresponsibly”. Thus, to handle nature properly, we must be as rational as possible in our decisions concerning biotech – or so that was the prevailing discourse. And who is able to make such rational decisions? Not the artist for sure, neither the lay person; perhaps the scientist – for the sake of our ignorance about the processes of ethical and logistic decision in science –, or definitely some kind of expert. Contrary to its own objective of breaking the gap between scientists, experts and lay people (Costa, 2007; Quintais, 2007), Art and Science at *Inside*, and particularly BioArt, sometimes impelled visitors to stress the need for that specialization.

Thus, we are in the face of contradictory, perhaps incommensurable, perspectives on art, nature and biotech, which combination challenged people's comprehension at *Inside* and helped in the constitution of the ambiguous irritating experience I highlighted. On one hand, art appears as an important bastion of freedom and individuality, on the other, because we are responding to the ethical imperative of caring and protecting nature even from our own acts [if not especially], biotechnology is expected to be highly and carefully controlled by who knows it best. When artists start overcoming their own boundaries of competence and begin to give up pencils and oils for petri dishes, bacterias and pipettes, these two perspectives clash and people may get confused and consternated as it happened at *Inside*. Visitors knew that a good part of the artists represented at the exhibition stated a very practical utility and political purpose for their artwork. The two most commonly highlighted goals were to approximate different and usually segregated social spheres and to raise public awareness on science and technology with the aim of improving political participation in the name of a more democratic scientific practice. The clearest examples of this utilitarian positioning regarding artistic practice were Oron Catts & Ionatt Zurr, ORLAN, and Eduardo Kac. But even for those cases, some visitors asked after how effective would their critique be, fearing that such interventions worked as vehicles of sacralization of science instead of critique. Anyway anyhow, as I stated in the previous section, despite all these fears and doubts and incongruities, people would hardly take a clear stand on Art and Science, letting it up to the artists' consciences and the younger generations to decide whether these interventions are ethical and desirable, or not. This lack of commitment can be interpreted as a consequence of

the distancing suggested by the futuristic discourse that pervaded *Inside*, but it can also run from a notion of nature that overestimates its fragility, exteriority and complexity as an object, and thus rely on experts to look after it and exorcise all the fears and anxieties that hard choices usually involve.

To stress that there were difficulties in combining different attitudes towards art, nature and biotech at *Inside*, does not explain why “nature” was such a big deal there when compared to other possible technoscientific realms of artistic intervention. There was surely an affective dimension in biomanipulation that was absent from artwork with robots and fractals, for instance. Though I have suggested that this may draw on a particular way of conceiving nature with old ancient roots in Plato, this does not explain its current existence and apparently increasing relative importance. I am afraid I cannot tell much more about it, though, as it is a way too dense question to be handled from my short and limited research experience.

Final Notes

Always at the verge

At *Inside*, one would get the feeling of being at the verge of something that has not quite yet arrived. Like a keyhole to the future, *Inside* was the paradoxical enactment of a promise of modernity that still remained a promise in the end. Visitors would get discomforted with the artwork there, and often they struggled to make sense of that experience. In the encounter with such unexpected mess and disciplinary promiscuity, their opinions, drawings and body language were usually ambiguous and incoherent.

The artistic practices behind the artworks displayed at *Inside* can thus be understood as problematizing activities, bringing forth new problems to the audience's perception and thought, an effect that runs partly from the artists' political play with presence and absence of discursive and non-discursive elements. When in the face of these objects within that particular designed space – which was discursively introduced in a very special way too –, visitors experienced the encounter and the irritation that precede and involve the ascribing of meaning and reflection. Then the “problems” happened. It is not like these people had not seen those techniques before – they were mostly college students and graduates of Biological Sciences and Arts –, but they had not asked the same questions they were asking now. To the questioning, discomfort, disturbance, amazement, etc, I called irritations. This work assumes that all those moods that were not indifference represented primal moments of problematization at the exhibition, and that they are interesting because they hint at the edge of custom and comfort, and so they may be used to think about social constructions around particular themes.

Future and nature were the axial themes I selected from artists' discourses, artworks and visitors' irritations to reconstruct and comment on *Inside* as a situation enabling the experience of problematization. Future, because it was an important discursive device within the exhibition, a cross-cutting motive that pervaded artists' and visitors' attitudes regarding Art and Science with different and politically interesting implications; nature, because it was the motto connecting a great part of the irritations I collected. Though both groups tended to adopt a linear and progressive perspective on scientific and technological development, they

did not share the same affective relation to it. The technopastoral future proposed by artists contrasted with the anxious feelings from the visitors I spoke to. Nevertheless, *Inside* was assembling too many realms for this last group to build up a coherent opinion on it, and despite all the anxieties, fears and ambiguousness, people rarely took a stand on Art and Science's ethical and political character. Ironically, people would find consolation in the idea of “future” as it was being used by the artists and the curator, and so they called upon it to defer responsibility to younger generations and artists' consciences, justifying their own lack of commitment.

On the other hand, “nature” may have helped in that distancing too. Within the context of the exhibition, visitors would often stress the ethical imperative of caring of nature as well as its fragility and complexity, features which asked for expertise when deciding about manipulating it. Thus being, the notion of nature invoked offered an immediate obstacle to artistic practice over biological media, as it required a sense of care and responsibility that drew mainly on the rational calculus of pros and cons concerning the purpose and utility of using biotechnology, conditions which art is not expected to observe. At *Inside*, especially for bioartworks, the principle of “art for art's sake” clashed with this constrictive and cautious attitude towards biotechnology that seemed to run from a particular way of understanding nature. But again, despite all these incongruities and the very obvious fact that Art and Science was already happening inside those rooms, that artists were indeed releasing possibilities and exploring alternatives there, in that present tense, the sensation of being at the verge of problems, of being near them but not quite yet there, inhibited engagement and commitment.

From Art to Medical Anthropology

Finally, one may ask: how come can a thesis on such particular aesthetic-motivated crossings between art and science provide useful insights to the debates of medical anthropology? Though I am addressing it here, I must confess that I barely felt this question pertinent or antagonist to my work throughout the fieldwork, analysis, and writing process on *Inside: Art and Science*. This is not only because I am normally skeptical about disciplinary boundaries as I argued before, but also because I truly believe that my thesis brings forth relevant issues to the field, even if it does it in a non-conventional fashion. First of all, most of my readings and academic commitment find their basis in the masters program I am now completing, and its beginning marked the moment when I decided to deeply embrace anthropological reflection and to look forward to making it part of my life. In that sense, I feel in debt to Medical Anthropology, or that is to say, to the professors and syllabuses that came across my path during my times in the University of Coimbra and UC Berkeley. Despite my current reluctance in calling myself a “medical anthropologist”, I do not disregard this disciplinary heritage that fed my mind as well as my spirit and enthusiasm.

Second, because my work is methodologically and conceptually experimental, I find it undeniably useful to foster debate on anthropological practice no matter its focus. Though I felt it growing when I was still in Portugal (Sousa, 2009), this experimental attitude was especially intensified by my UC Berkeley period, when I met Paul Rabinow and my colleagues at the Labinar. For almost two terms we were encouraged to try unconventional research tools, questions, concepts and analytic perspectives, media of presentation, and even forms of working, as we would split into groups and work together inside and outside the class in order to build up our final projects. Such stimulating intellectual environment made me reconsider some of my presumptions about anthropological research, a process through which I feel I am still undergoing. As a consequence of this maturation, my thesis suffers from some incongruities, as I explained before, mostly concerning the dialogue between my methodological frame and subsequent interpretation style. The change feels good, though. At any case, I want to stress that I am in debt to the berkeleyan environment every time I make

reference to a more positive (not positivist) and constructive attitude regarding the creation of contextual comprehensions.

Thirdly, last but not least, the contents of my work directly derive from and feed the anthropological debates on biotechnological development and its impact in our daily-lives. In fact, my thesis is not as much about art as it is about material and attitudinal reconfigurations of the social world due to the introduction of new modes of production. In that sense, *Inside: Art and Science* serves the purpose of exploring these same reconfigurations at the level of aesthetics within a particular situation. This thesis calls upon the implications that biotech may have beyond health care, reproduction, or scientific research. At the same time, because of my use of *irritation* and *problematization*, it also stresses the different geometries of affection regarding the use of scientific knowledge and techniques. As I argued, issues concerning environment, animals and biological manipulation were far more irritating and problematic to my interviewees than the ones concerning robotics, for instance. This surely opens ground for further investigation on why and how this is happening. With this thesis I also show and comment on how naïve, unaware, and incongruent people may be regarding these very same topics of affection. My remarks on the discursive use of future within *Inside* and the way visitors conceptualized the care for nature there illustrate this point and raise very practical questions: how can we think about future in a responsible way, without deferring responsibility for it on future generations? Is a particular sense of historical relativism regarding scientific progress inhibiting commitment and action? Is the reliance on expertise and rational decision bringing us to alienation on topics concerning scientific practice and biotech use? If it is so: don't we need to put a little more effort on public education for science, art and ethics? With these questions on the table: how come cannot this thesis be of interest to the debates of critical medical anthropology on science and biotechnologies? Anthropologists have surely a lot of critical work to do on the current discourses on future, progress, and nature. I hope this thesis contributes a little for that too.

Artworks at *Inside* were like stones hitting the calm waters of visitors' perception and thoughts on what can be done with scientific knowledge and techniques. As it happened, irritation came about, or the sense that something was wrong or too different to be easily and plainly put into words. Discomfort, ambiguousness and incongruities at *Inside: Art and Science* hint at the mess that may precede organized solutions, established discourses, and new dispositions. Yet, for now, Art and Science remains a just exciting grey zone.

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5. "The Art of the 21st Century", large poster at the reception counter.

Annexes

1. Script: exploring the visitors' reactions and reflections on the artworks displayed at *Inside: Art and Science*
2. Table with interviewees' characterization
3. Experimenting with spatial experience: spatial exercises

1. Script: exploring the visitors' reactions and reflections on the artworks displayed at *Inside: Art and Science*

a) Semi-structured short interview, open response; audio recorded

Topics	
Ramification of “Art and Science” and irritations	What is your opinion about the exhibition (why?)? How would you explain it to a friend?
	What did impress you the most in here?
	Did you know about “art and science” before? Have you read anything about it? Perhaps in books, magazines... If so, where?
Artistic paradigms and ethical regulation	What kind of contribution to both art and science can the intersection between the two fields held? What risks and benefits would you associate to it?
Autonomy, creativity and intelligence; on the relative status of objects and humans	Please, comment: “Creativity is not exclusive of human culture. It can be also recognized in the physic, biological and artificial world.” (Moura, 2007: 53)

b) Interviewees' characterization through questionnaire; written down (in order to contextualize the interviewees' answers and to roughly characterize *Inside's* public)

Gender

Age

Education level: basic, intermediate or higher (and field)

Occupation

Municipality of residence (or country, if it is not Portugal)

2. Table with interviewees' characterization

Gender	Age	Education	Field	Occupation	Residence	Interview's length	Date
F	47	Higher/Bachelor	Environment	civil service	Lisbon	3:48	25-Sep
F	28	Higher/PhD	Art Studies	research	Aveiro	6:30	
F	26	Higher/Bachelor	Photography	unemployed	Lisbon	6:30	26-Sep
M	42	Higher/Bachelor	Architecture	teacher	Oeiras	5:15	
M	34	Higher/Bachelor	Sculpture	teacher	Lisbon	4:40	
F	59	Higher/Bachelor	Agronomy	retired	Lisbon	7:30	29-Sep
F	23	Higher/Bachelor	Sculpture	marketing	Cascais	2:40	
M	60	Higher/Bachelor	Engineering	retired	Lisbon	6:20	
M	38	Higher/PhD	Medicine	research	Oslo, Nor	4:12	
M	23	Higher/Bachelor	Sculpture	sculpture	Lisbon	05:19	
M	61	Higher/Bachelor	Economy	retired	Loures	04:33	30-Sep
M	27	Higher/Bachelor	Electro Engineering	student	Aveiras Baixo	04:29	
M	34	Higher/Masters	Computational Economics	programmer	Lisbon	10:39	
M	23	Higher/Bachelor	Environmental Engineering	student	Cascais	03:37	
F	30	Higher	Communication	journalist	Oeiras	05:49	
F	75	Higher	Humanities	retired	Lisbon	05:32	2-Oct
F	50	Higher	Visual Arts	teacher	Lisbon	04:22	
F	49	Higher	Literature	teacher	Lisbon	04:21	
F	25	Higher/Bachelor	Visual Arts	unemployed	Sintra	07:12	9-Oct
F	45	Higher	Geology&Communication	teacher	Coimbra	05:20	
M	58	Higher/Masters	Visual Arts&Multimedia	artist	Montreal, Can	06:49	
F	26	Higher	Interior Desing	designer	Sintra	08:17	
M	28	Higher	Arts	dance teacher	Brazil	10:01	21-Oct
M	43	Higher	Electronics	technician	Almada	04:25	
F	54	Higher	Sociology	entrepreneur	Lisbon	04:43	
F	21	Higher	Audio-Visuals	student	Barreiro	05:15	22-Oct
F	34	Higher/Masters	Biology	research	Lisbon	05:38	
F	25	Higher/Bachelor	Multimedia	research	Lisbon	05:38	
F	46	Higher	Psychology	psychologist	Lisbon	06:43	23-Oct
F	36	Higher	Dance	dance teacher	Lisbon	07:18	
M	20	Higher	Architecture	student	Lisbon	08:51	27-Oct
F	45	Higher	Biology	professor	Lisbon	08:42	29-Oct
M	44	Higher/PhD	Visual Arts	research	Cascais	36:19 (1:50:00)	3-Nov

Exercício sobre a topografia da cidade: Arco e Círculo

27/06/23

- Com traçado, fazer por favor o traçado da cidade.
- Transformar as imagens e influências, mostrando, mostrando, mostrando, sendo, mostrando algo sobre as diferentes partes da cidade.
- Alguns dados:
 - Nome: []
 - Matrícula: []
 - Disciplina: []
 - Assinatura: []
 - Gráfico de avaliação: []

Spatial exercise number 25

Exercício sobre a topografia da cidade: Arco e Círculo

27/06/23

- Com traçado, fazer por favor o traçado da cidade.
- Transformar as imagens e influências, mostrando, mostrando, mostrando, sendo, mostrando algo sobre as diferentes partes da cidade.
- Alguns dados:
 - Nome: []
 - Matrícula: []
 - Disciplina: []
 - Assinatura: []
 - Gráfico de avaliação: []

Spatial exercise number 26

Exercício sobre a topografia da cidade: Arco e Círculo

27/06/23

- Com traçado, fazer por favor o traçado da cidade.
- Transformar as imagens e influências, mostrando, mostrando, mostrando, sendo, mostrando algo sobre as diferentes partes da cidade.
- Alguns dados:
 - Nome: []
 - Matrícula: []
 - Disciplina: []
 - Assinatura: []
 - Gráfico de avaliação: []

Spatial exercise number 27

Exercício sobre a topografia da cidade: Arco e Círculo

27/06/23

- Com traçado, fazer por favor o traçado da cidade.
- Transformar as imagens e influências, mostrando, mostrando, mostrando, sendo, mostrando algo sobre as diferentes partes da cidade.
- Alguns dados:
 - Nome: []
 - Matrícula: []
 - Disciplina: []
 - Assinatura: []
 - Gráfico de avaliação: []

Spatial exercise number 28

Exercício sobre a topografia da cidade: Arco e Círculo

27/06/23

- Com traçado, fazer por favor o traçado da cidade.
- Transformar as imagens e influências, mostrando, mostrando, mostrando, sendo, mostrando algo sobre as diferentes partes da cidade.
- Alguns dados:
 - Nome: []
 - Matrícula: []
 - Disciplina: []
 - Assinatura: []
 - Gráfico de avaliação: []

Spatial exercise number 29

Exercício sobre a topografia da cidade: Arco e Círculo

27/06/23

- Com traçado, fazer por favor o traçado da cidade.
- Transformar as imagens e influências, mostrando, mostrando, mostrando, sendo, mostrando algo sobre as diferentes partes da cidade.
- Alguns dados:
 - Nome: []
 - Matrícula: []
 - Disciplina: []
 - Assinatura: []
 - Gráfico de avaliação: []

Spatial exercise number 30

Exercício sobre a topografia da cidade: Arco e Círculo

27/06/23

- Com traçado, fazer por favor o traçado da cidade.
- Transformar as imagens e influências, mostrando, mostrando, mostrando, sendo, mostrando algo sobre as diferentes partes da cidade.
- Alguns dados:
 - Nome: []
 - Matrícula: []
 - Disciplina: []
 - Assinatura: []
 - Gráfico de avaliação: []

Spatial exercise number 31

Exercício sobre a topografia da cidade: Arco e Círculo

27/06/23

Com traçado, fazer por favor o traçado da cidade.

Transformar as imagens e influências, mostrando, mostrando, mostrando, sendo, mostrando algo sobre as diferentes partes da cidade.

Alguns dados:

- Nome: []
- Matrícula: []
- Disciplina: []
- Assinatura: []
- Gráfico de avaliação: []

Six spatial exercises overlapped, from number 25 to 31