

The right of life and death in a Biology curriculum¹

Direito de vida e morte em um currículo de Biologia

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ABSTRACT

This article aims to analyze the arguments of undergraduate Biology students about genetic tests that involve the selection or rejection of racial characteristics, physical disabilities, eugenics, human reproduction, and abortion. Through Foucault's analysis of the material produced in the focus groups, we argue that the biotechnological discourse has built a regime of truths about livable bodies and killable bodies, stipulating healthy genetics and instituting standards, abjects and rights that are not problematized in the educational curriculum investigated here. By problematizing the right to life and death, we were able to confront ethical and cultural dimensions placed on participants in biotechnological procedures, such as early life, embryo disposal and abortion. Finally, from the confrontations provided, we built some considerations to think about biotechnologies, curricula and the production of non-fascist subjects.

Keywords: Gender. Body. Curriculum.

RESUMO

Este artigo tem o objetivo de analisar argumentações de licenciandos em Biologia acerca de testes genéticos que envolvem seleção ou descarte de características raciais, deficiências físicas, eugenia, reprodução humana e aborto. Por meio da análise foucaultiana sobre o material produzido

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nos grupos focais, argumentamos que o discurso biotecnológico tem construído um regime de verdades sobre corpos vivíveis e corpos matáveis, estipulando a genética saudável e instituindo padrões, abjetos e direitos pouco problematizados no currículo de formação aqui investigado. Ao problematizarmos o direito de vida e morte, pudemos confrontar dimensões éticas e culturais postas aos/às participantes nos procedimentos biotecnológicos, tais como início da vida, descarte de embriões e aborto. Por fim, a partir dos confrontos propiciados, construímos algumas considerações para pensarmos biotecnologias, currículos e produção de sujeitos não fascistas.

Palavra-chave: Gênero. Corpo. Currículo.

Introduction

Recently, we were surprised by the news that scientists in China have created two genetically modified babies, starting a new human “strain” (LIY, 2018). The surprise is due to the fact that the twin sisters would not be genetically modified for having a hereditary disease, but to make them immune to the Human Immunodeficiency Virus (HIV). The practices of biology and engineering that study life arise from the need to diagnose the risk or the occurrence of inherited genetic diseases, and are carried out, mainly, by private health networks, but they begin to point, timidly, in the Unified Health System (Sistema Único de Saúde, SUS), in the form of genetic counseling (GC). The body starts to gain biotechnological interventions never tried before and Darwinian evolution starts to become obsolete. It is the beginning of the biotechnological era that provides artificial selection in accordance with standards established by current discourses.

Using the work of Keck and Rabinow (2009) as a starting point, we reflect on how the genetic body is crossed by norms and regularities that control and form our “self”. These authors, through the question “what is the ‘we’ of ‘our genome’?”, show that DNA allows us to visualize the most profound and molecular possible of ourselves. In this sense, Foucault, aware of the political problem of genetics, analyzes the relationship between human capital and “the rarity of good genetic equipment” (FOUCAULT, 2008, p. 314), considering the functioning of the biopolitical rationality that makes some people live and leaves others to die through a “biological-social racism” (FOUCAULT, 2006, p. 75), in which “those who legitimately constitute a kind of biological danger to others” (FOUCAULT, 1998, p. 150) of a population will be killed.

Based on the problematization about the right to life and death inherent to genetic tests taught in the Biology curriculum, this article analyzes the arguments of undergraduate students from a public university in northeastern of Brazil about genetic tests that involve the selection or rejection of racial characteristics, physical disabilities, eugenics, human reproduction and abortion. In this analysis, we understand curriculum as being what “produces meanings, practices and subjects of a certain type; it makes us want things, changes our perceptions, shapes and seduces us” (PARAÍSO, 2007, p. 24). A curriculum that makes one want things, shapes and invites to a system of reasoning, a set of thoughts that “are not natural; they are built from specialized knowledge systems” (POPKEWITZ, 2001, p. 13). When problematizing the right to life and death, we argue that the biotechnological discourse in the educational curriculum has produced a regime of truths about livable bodies and killable bodies, stipulating healthy genetics and instituting standards, abjects and rights. A biotechnological rationality that defines livable lives, erases the difference and opens space for fascist discourses in Education.

By uniting curriculum, biology, genetics, biopolitics, bodies and education in this writing, we are implicated in the current scenarios of curricular storms (PARAÍSO, 2018), barbarism from neoliberal rationality in curriculum policies (MACEDO, 2019) and normative setbacks in the Brazilian curricular field (CARDOSO *et al.*, 2019). A curricular research attentive to this context needs to “corrode” the senses already taken by this logic and allow “the unthinkable that it seeks to make invisible to inhabit the legitimate sense of education again” (MACEDO, 2019, p. 1117). Do not question in our curricula, especially those of teacher education, the policy of subjectivity that problematizes generification and racism means to fulfill the neoliberal education project. After all, the existence and reproduction of this rationality “suppose class, racial and sexual violence” (LAZZARATO, 2019, p. 75).

We hence covered in this writing the production of abject bodies that are taken here, from Butler’s discussions, as those that “do not conform to the norms of cultural intelligibility” (BUTLER, 2010a, p. 39). Abject is by no means restricted to sex and heteronormativity. It relates “to all types of bodies whose lives are not considered ‘lives’ and whose materiality is understood as ‘not important’” (PRIS; MEIJER, 2002, p. 161). As it is a research produced in the Educational field, we wanted to understand how discursivities that hierarchize bodies circulate and cross future biology teachers, legitimate subtle biopolitical practices and underpin macro pictures of evaluative or either irrelevant disputes in our current democratic context.

In order to build such problematizations, we base our research on the Foucauldian analysis of discourse and the empirical material used is the result

of focus groups conducted with students at the end of the graduation course. Students who have already passed through the curriculum and carry their knowledge, techniques and ways of seeing the world. With the focus group, in addition to capturing the meanings that the curriculum, its disciplines, experiences and projects gave them, we wanted to create moments of interpellation, of confronting oneself in contact with others (BUTLER, 2015). We wanted to bring out the teaching and learning of a curriculum (PARAÍSO, 2016). Three focus groups were developed and had the participation of six students in each. During the group discussions, the students were encouraged to discuss, based on reports, films, news, historical facts and questions we asked, about the in vitro fertilization (IVF), preimplantation genetic diagnosis (PGD), benefits and harms of these tests, human reproduction, as well as ethical and cultural implications of biotechnological work.

Based on this material, we built three more sections. In the first one, we discuss the statements raised when biotechnological techniques are used to select certain physical characteristics in the fetus, when phenotypes are considered to be more desirable. In the second one, we discuss how the search for a genetically healthy body creates the category of bodies that do not fit the norm, are defective, abject, monsters. In the third one, we present ethical and cultural conflicts imposed to participants in biotechnological procedures, such as early life, embryo disposal, abortion and eugenics. Finally, from the confrontations provided, we built some considerations to think about biotechnologies, curricula, and the production of non-fascist subjects.

Between the ugly, the beautiful and the standard

In reportages on the choice of characteristics when deciding to donate semen, the statistics of the longing for healthy, perfect bodies that meet the expectation of what is beautiful draws attention. The search for perfection and / or the selectivity of the human being is transforming the semen banks into a kind of human menu, as described in the report: “Blue or brown eyes? Straight or wavy hair? It is almost like a menu, all in order to make sure that the child will go as planned” (É POSSÍVEL..., 2018). According to data from the National Health Surveillance Agency, between 2011 and 2016, there was an increase of 2,500% in imports of semen, this is because people who turn to the process are looking for certain characteristics and justify that they are not easily found in Brazil (FAMÍLIAS..., 2017). They claim that this preference is

based on the detailed record that international semen banks provide for those seeking this alternative of reproduction, where it is possible to know the physical characteristics, personality, profession, lifestyle and even see photos of the childhood and adolescence of the donor.

In Brazil, in relation to the choice of the child's gender, Resolution no. 2,168 / 2017 (CONSELHO FEDERAL DE MEDICINA, 2017) prohibits such a choice: "RHA [Assisted Human Reproduction] techniques should not be applied with the intention of selecting the sex (presence or absence of Y chromosome) or any other biological characteristic of the future child, except when it comes to avoiding diseases related to the child-to-be-born's sex". Even though the selection of gender and physical characteristics is not allowed, it is sure that these processes occur in RHA clinics, since there is a record on the donor genotype and phenotype and that the choice of people who seek this procedure prevails. Based on these discussions, the participants were asked about the implications of the search for a particular phenotype:

Cyborg: *These are rules that have been built and that we perpetuate. We think the other is ugly simply because it has a different skin tone than the one that was consolidated as beautiful, and we don't look at the internal beauty, what matters is the cover.*

Major: *This is very relative, even the popular saying goes "beauty is in the eye of the beholder". So, why bind us to the Europeanized rules of today's society? We are so attached to these issues that most of the time we consider a being as ugly simply because they has a skin tone different from the European standard and we forget to see who that being really are, what good things they can provide.*

Robocop: *In that case, I'm against it. Who determines what is beautiful and ugly in society, by the way? Besides that the "black man" here could not pass on his genetics to his children. (Laughter). If you consider this pattern.*

T-800: *This is a delusion of society, to want these people as dolls, to create people in a certain standard.*

Rachael: *When they say that a person is ugly or beautiful, who imposed that? This is something that goes through all these years and ends up becoming natural, as the concept of being blond with clear eyes as being the concept of being beautiful. So, it is like in the case of these celebrities who are trying to have children who look like dolls².*

2 The names used were extracted from science fiction films that involve cyborgs to preserve the image and guarantee the anonymity of the participants involved in the research.

For the research participants, the production of the body, when connected to biotechnology, is intelligible and problematic in aesthetic terms, that is, already captured by the discourses of body beauty. For such students, the body subjected to biotechnological procedures is a signifier, whose interdictions are understood in terms of being legitimate or not being considered beautiful. Some students do not have references that make it possible to problematize cultural constructions on bodies. After all, in education, the bodies were agreed to gain outlines of prescription and homogenization, abnormalizing so many other possible ways, barring movements and transits. Media, aesthetic services and curricula invest culturally in order to plasticize the beauty of bodies and hide imperfections (VASCONCELOS; CARDOSO; FÉLIX, 2018). In this sense, the curriculum becomes “a space that seeks, all the time, to produce bodies that weigh and that matter”, that materialize the norms (PARAÍSO, 2016, p. 210).

Biotechnology appears as a possibility to create bodies that corroborate a standard of beauty and aesthetics, with the conception of bodies that are beautiful, healthy, individual and collective, which confirm the expectation of usefulness and perfection. For Goellner and Silva (2012), the enthusiasm that we have today with biotechnologies is similar to what we had, at the beginning of the last century, with eugenic practices. However, one must consider the reality we live in, in which the investments of power over the body occur in different ways (GOELLNER; SILVA, 2012). For Cardoso (2012), conceptions about the perfect, healthy and beautiful body are hallmarks of western history, through policies that normalize bodies. These policies legitimize “male, white, heterosexual and European individuals” (CARDOSO, 2012, p. 12).

Santos and Zago (2013) show how State and neoliberal market regulations, through the exercise of power, produce subjectivities, regulating and controlling bodies so that they meet a certain standard of beauty. “The showable body production process, from the displacement of an anti-body towards a *body-that-matters*, demands adherence to a transformation process of the meat materiality that translates into a disciplined and controlled manufacture of a (new?) body” (SANTOS; ZAGO, 2013, p. 147). From the speech of the students, we can think of the standard of body and beauty taught by this curriculum and that, possibly, reverberates in the curricula of basic education when they act.

The body standardization and the determination of characteristics that should be included in a phenotype were other aspects discussed. These questionings have aroused, among other things, a question raised by a participant about the ravages of tests such as the PGD regarding the lack of biological diversity for the evolution of species, in a long-term situation:

Ava: *The big problem of these practices would be carrying this eugenic side. If everyone had the access to create, select the best things in the child, we would have a generation that would be perfect. Great, fine. But, imagine by evolution. Evolution is made with differences. Variety guarantees evolution and survival. And it is also a social illusion, which has negative effects: if one part of the population were perfect and the other part were born with some kind of disability, those people with disabilities would be excluded due to their limitations.*

Biotechnologies are not accessible to everyone in the population. According to **Ava**, we would have a predominance of groups over others, in relation to those who can “buy” the body that provides a better quality of life and / or acceptance for life in society. Major also commented on the “apartheid” that would lead to the extinction of biological diversity, thinking the PGD in the sense of producing aesthetics for a single group. This would mean that the quality of life for some would be based on the “impossibility of life for many, in a way that biopolitics and tanatopolitics would continue to refer to each other” (DUARTE, 2009, p. 50). Good quality of life that, as Nazi doctors discussed a few decades ago, intertwines “economy and biology” to define a politically qualifying life (ROSA, 2009, p. 382).

Instrumentalizing the biology curriculum with genetic techniques and knowledge in a neutral way, without pointing economic, social and cultural implications, is to bet on the curriculum sameness instead of educating from the perspective of “dispossession-vulnerability” to subvert the curricular logic of recognition from what has already been given (MACEDO, 2017, p. 548). When, in established relationships, students claim other possible ones, they face this pedagogical desire that standardizes bodies and brings up the out, the interstice, the deficient body.

Thinking about these bodies that do not fit the standards, we asked the participants about the people who present some physical and / or cognitive limitations; situations that they were already putting, but that they did not problematize, and we obtained the following dialogue:

Robocop: *Then you got me. (Break). These technologies are interesting, but when we think about these people who are there and could not be just because they have a disability, it puzzles us.*

Rachael: *I know that I'd be a person who wouldn't have the opportunity to be born and be who I am if I had been through such a test. Because*

I'm not a person who would be in accordance with the standard required for PGD and the people who look for it.

Ava: *In the same way that we consider good for some things, as in the case of people who suffer from diseases, they're also bad because those same people who would suffer from some disease wouldn't even exist.*

Major: *Just look around us, we always find people with a disability. And imagine that the same people would not exist just because they do not meet a standard. It isn't because people are born with a disability that they won't be able to have a life, construct a history and be part of society.*

Cyborg: *It's difficult. But there's also the question that if these people weren't born, we wouldn't know them. So, we wouldn't feel bad for accepting these tests.*

T-800: *On the one hand, I think it's sad that a person isn't born because it doesn't meet a standard. On the other hand, I think about the deprivations of that person and, if they weren't born, we wouldn't be sad that they didn't exist.*

It is in the processes of “othering”, of being “caught”, undone in the encounter with the other, of seeing what the curriculum has not taught, of being confronted by the scenes of the other, that we denaturalize knowledge and techniques that condition us to see and think in a single way. If the group saw bodies by a particular standard, by “undoing, deconstructing and dismantling all forms of curricula, all the reasoning that divides and confines, all the truths that imprison” (PARAÍSO, 2016, p. 231), it was possible to glimpse the difference. The teaching of the curriculum was forgotten and open to learning (PARAÍSO, 2016). Biotechnologies are confronted as a way of biopower that controls bodies, transforms, and shapes them for usefulness and perfection. The disqualification of the embryo that does not have a genetic load that fits the phenotypic standards of aesthetics and health is problematized. The qualifying embryo is put on hold, which is certainly a rare thing and could enter “circuits or economic calculations” (FOUCAULT, 2008, p. 313).

(Re)productive health and monster production

The scientific questions related to cell structures, genetic code manipulation, selection of healthy embryos and / or that meet a certain phenotype, and how and when a life begins, as well as the impact that these techniques have on social practices, have aroused controversies. This happens because “genetic research

makes visible an evil located deep within the body. But, far from obligating to look at it in a tragic way, it encourages action to intervene on the body” (KECK; RABINOW, 2009, p. 93). These are biopolitical times in which the scientist moves on lands that, before, only the sovereign could enter (AGAMBEM, 2002). Considering these scientific issues and their modes of subjectification, we asked about ways of intervention of *in vitro* fertilization (IVF), and the statements we heard were:

Ava: *It has a positive bias because there are people who don't want to get married but want to have a child. Then they go to a semen bank and take someone else's semen. But there's a negative side, that you need medical help, help from a psychologist; sometimes the person is there, wanting to have a child, without thinking about the future. Sometimes you want something now and later you won't be able to say no. But I wouldn't use it, I don't think it's right.*

Robocop: *I'm in favor of all assisted reproduction techniques, if it's for the good of the population, in terms of diseases and helping those in need.*

Rachael: *IVF is a technique that has been around for a few years and has helped and helps many people. Like Robocop, I see assisted reproduction techniques as good, as long as they are focused on human health. I don't agree with what is done to change people and bodies, but for health and well-being I think it's good.*

Cyborg: *I see it as a good thing, as it is, if a couple naturally tries to generate a child and is unable to do so, they certainly must look for some way that works, and then this technique will help couples to be successful with their relationship, with their baby, so I see it as something effective.*

Major: *Following the biological flow, the ideal is that it was a nature conception, but those who for some reason are unable and financially able to afford it, I see no problem. And there's also the possibility of adoption if nothing works.*

It is a fact that tests such as PGD are disseminated as hope to people who suffer from infertility problems or genetic diseases that are hereditary and that compromise people's quality of life, and that can even cause death (KECK; RABINOW, 2009). In the training curriculum analyzed, biotechnologies are seen as salvationists for correcting problems and providing health. They are built as providers of dreams, which help those in need. A conception “that science and technology are capable of solving the problems of humanity” (FREIRE, 2007, p. 55). Wishing to problematize this Salvationism, we suggested that they pointed benefits and harms that tests like these could provide to society.

Ava: *Who wants to have a sick baby? Or with limitations. No, we always want the best for ours. Think about how we could eliminate many diseases. The major problem with this is that aesthetics would go hand in hand with science. People want to be choosing eye color, hair color, skin color. And here comes the worst side, to use these techniques you must have a lot of money, so only those who have money can do it.*

Robocop: *I'm totally in favor of these tests when they remove diseases from embryos. I'm not in favor for physical characteristics. Perfection and IQ is something eugenic.*

Cyborg: *As soon as a whole diagnosis is made and a laboratory analysis is done, it will really check if there's a predisposition for that fetus to have health problems and then many families aren't prepared to deal with such problems, and if suddenly there's the possibility of nipping the evil in the bud, I believe that the fruit of all this will be something better.*

T-800: *It's positive in the case of women who have problems with childbearing, or in the case of diseases that they have in the family and that pass on to generations. And it's negative when they're selecting characteristics that they consider best, which wouldn't be something natural, and also due to the large disposal of embryos that were fertilized. Because I consider life. I think that life begins with fertilization.*

Rachael: *It would be great to use these techniques to eliminate diseases, to delete only the chromosomes that cause disease, not to be choosing characteristics that they think are beautiful, you have to be careful with PGD.*

These statements, when pointing what is desired, signal discomfort with what is out of standard. This implies in asking: how do we relate to the “defective”, the abject, those who would be discarded, the monsters of our present time? The monstrous figures are considered “abnormal” and they make it possible to understand what is thought as normal, turning the boundaries that separate the normal from the abnormal confusing, as their limits are not clear and neither easy to define (COURTINE, 2009). A constructive process that, by standardization and control (FOUCAULT, 1998), is organized in an exclusive matrix that produces “a domain of abject beings” (BUTLER, 2010b, p. 155). The abject, when read solely by biopolitical rationality, are targets of “a racism that a society will execute on itself, on its own elements, on its own products; an internal racism, of permanent purification, that will be one of the fundamental dimensions of social normalization” (FOUCAULT, 2006, p. 73).

Regarding the Foucauldian theory of human capital, Duarte (2009) states that biogenetics will be the way that people will try to enhance their capacities and skills to become competitive in the market. After all, “it is also through

biogenetics that the entrepreneurs themselves will try to control the potential risk factors – such as genetically inherited diseases, for example – that can put them, and their descendants, in unfavorable situations in the competition for their lives’ support” (DUARTE, 2009, p. 48). Individuals imbued with this governmentality, understand that “the production of children, can fit into an entire economic and social question from this problem of good genetic equipment rarity” (FOUCAULT, 2008, p. 314). When participants affirm that “nobody wants a baby with limitations” and that they have to “nip it in the bud”, they have naturalized this logic and the lives that are worth living.

From the subjects of this curriculum, scientific discourses trigger a eugenic sense by which these techniques sometimes keep relationships, judge the efficiency of PGD as a potential to improve the quality of life, to form beings with characteristics considered perfect. In this sense, molecular techniques, through Biology and engineering, put the body in evidence, from the moment that life leaves the private sphere and enters the public domain. Therefore, “the body escapes, thus, the property of the individual when it enters a technical and commercial process: then it becomes visible in the scenario of economy and the right” (KECK; RABINOW, 2009, p. 102).

In order to confront these statements, we asked about the possibility of the participants to carry out the PGD and the answers varied with the reasons that are involved in the decision:

Major: *We say that we would not do it until we find ourselves in a situation that puts us to the test, and if we have the choice to spare a child from suffering the consequences of illness or physical, cognitive limitation that comes from genetic inheritance, because later the controlling and stereotyped will reject this person. So, I would.*

Cyborg: *It is linked to the prevention of children who may be born with health problems, and then it can lead to a bigger problem, in which the family will not know how to deal with this child. The harm that may occur, however, we know that there is a life, regardless of whether or not you are aware, it is a life. And when this life is taken it is not cool, especially us who love life, and want well being for humanity.*

Ava: *I don't think I would do PGD, because I don't have a trace of illness that could pass on to a child. While IVF, if I couldn't generate it, I could even do it.*

Robocop: *Only if I needed to do the IVF and had the money to do the PGD. But I just wanted to know about the disease, so he doesn't have a disease. As for the phenotype, I would not select, these business of choosing a characteristic, I am against it.*

T-800: *I don't intend to, even if I could afford it. As for the money, because it is expensive, and as for the morals and ethics involved in this process, which I do not agree with.*

Rachael: *Thinking about my keratoconus, if I were going to have a child I would like to know if she would have one too. In fact, I wanted to have a child due to natural conceptions, but then I wanted to do a genetic mapping, to see if he would have the same disease as me. It is not that I would do PGD and would discard if I had the disease. I wanted mapping just to know beforehand to undergo treatment early.*

When they call for improvements, disease mapping, prevention of disabled children, caution with future stereotypes, concern for families, we see that these individuals work in the crossings that cross science, biotechnology, and eugenic issues. When science is taken “as that which unveils, announces discoveries, generates innovations, promotes improvements, in short, as essential, demand and manufacture subjects of a certain type” (CARDOSO, 2018, p. 944). Subjects captured by the biotechnological discourse that, when not being put in suspicion in their teaching, offer future forms of life that erases the lives already existing in the curriculum.

From the scientific knowledge they have about bodies and the moral concepts about life, the subjects alternated the ways of positioning themselves discursively. The reports show the delicacy of this subject and the controversy that this test causes, since they once affirmed that the PGD could potentiate a eugenic factor. Furthermore, “can it be said that the genome acts invisibly as a structure underlying the set of behaviors common to the ‘human family’?” (KECK; RABINOW, 2009, p. 83-84). This questioning makes it possible to reflect on how the genome relates to the conception we have about the body and how it can be transformed through the power devices that are used by genetics. So, it is important to ask “what does genetics concern us?” (KECK; RABINOW, 2009, p. 84).

It concerns us as the genetic body is crossed by the possibility of control: by knowing how its genotype is constituted, its phenotypic predispositions and possible behaviors are known. From the device of genetics, bodies come to be seen and perceived through the genome. Then, “the visible appearance of the human body is thus linked to an invisible structure whose intimate changes produce radically different bodies: different phenotypes, analogous genotype” (KECK; RABINOW, 2009, p. 89). In this sense, genetic tests produce an image of the body and a possible personal identity as they map diseases and establish a reality for those looking for them. Biotechnology was not harmful - even if it

conflicted with moral speeches triggered in other episodes of the focus group - as soon as it was needed to provide a better quality of life for family members.

In this way, the reproductive health of families would take on new shapes. After all, for Foucault (2008, p. 234), “given my genetic equipment, if I want to have a descendant whose genetic equipment is at least as good as mine, or, as far as possible, better, I will have to find someone with whoever gets married whose genetic equipment is also good”. In the name of the quality of life of the species-body, put in check the sixth article of the Universal Declaration of the Human Genome, which establishes: “no one will be subject to discrimination based on genetic characteristics that aims to infringe or exert the effect of infringing the rights human rights, fundamental freedoms or human dignity”.

If in the beginning the monster was seen by religion as “miracle, harm, sign, fruit of sin or accident of conception” (COURTINE, 2009, p. 491), after the 17th century, it fell under the jurisdiction of science when it entered its laboratories and sift through your observation. And then, a monster continued to be understood as a “sign of disorder in the world, close to natural disasters” (COURTINE, 2009, p. 491). That is, unnatural, non-normal beings, who have served since then, an instrument to cry out for order and reason. With biotechnology and its discourse of normal and abnormal genetically, qualifying or non-culturally, the monster starts to be identified and captured by precise techniques that break superficial layers of appearance and penetrate its molecular intimacy.

In research on teacher education curriculum in biology, Oliveira and Cardoso (2013, p. 70), facing scientific knowledge that crossed the students, define this science as “built of Enlightenment novelties, of their fascist humanism, forced and modeled by the imposition of their certain truths form of knowledge [which] on its hierarchical and excluding altar promoted an understanding of fractional knowledge, morally individualistic and authoritarianly copyist”. Based on the findings of this article, we need to make the biological sciences curricula, at their different levels of education, open to new learning (PARAÍSO, 2016). Curricula that disassemble engendering reasoning to stray from the desire to continue materializing and naturalizing normalized bodies.

Selection, eugenics or abortion?

As in the literature, the most problematic issues during the focus group were neo-Nazism and abortion. Thus, we asked the participants to comment on what it would be like if the eugenic groups had access to biotechnological practices:

Robocop: *If Hitler had that power, wouldn't it be a disgrace? If he killed half a world of people, imagine with biotechnologies. Only those who passed these tests and selected with their characteristics were born. These technologies are always born saying that it is for the good, but they can kill a lot. I wouldn't have been born myself, because they look for characteristics that I don't have.*

Ava: *Eugenics already had before Hitler, and also these control measures, with the sterilization of women and everything. If they had an illness, they could not have children. If the parents had an illness, they would have no children. In today's times it would be much worse. I think the government would end those people who were not born perfect and healthy, to have only the perfect people in the population. It would be a much greater exclusion and selection than in Nazism.*

Cyborg: *At the time of Nazism to have a perfect society, it brings us a little indignation because they have neither the sensitivity nor the ethics when working with science. Nowadays, ethics is well linked to science. This is because it is new times, because it is more natural than before, because before things were more brutal, for example.*

Major: *It would be the extinction of plurality, there would only be the perfect in the imperfect world, because once you cease the opportunity of a life to show who you are in your singularity, that world is not good, it is not perfect.*

T-800: *We would not have autonomy, everything had already been decided and only those who lived by the standard they wanted lived. These people who resort to these tests are the ones who have money and who just want people to be born in a certain way.*

Rachael: *It would be terrible, if you are already looking for people with certain characteristics, then many would not exist, like me, who have vision problems and dark skin. It is a bad thing to think about, because only those who meet a standard would live.*

By relating a technique taught in biology curricula to a hypothetical situation of exclusion and racism, we wanted to confront their knowledge, understand their perceptions of the world, identify which arguments they would resort to, understand how they see the role of science in today's society. The problematizations were around who would be the most recurrent users of these genetic tests; what would be its main characteristics; the purpose for which people use it, whether it would be for therapeutic purposes or just selection of phenotype characteristics; as well as the resumption of the extermination of a population.

The exception was the statement by Cyborg, who believes that biotechnological practices differ from the eugenics of the past when claiming

that our society today is different and that science is subject to an ethics. He was one of the most enthusiastic about this technique. We must emphasize, however, that knowledge about biotechnologies is not learned only in the biology curricula. The promises of the genome are linked to the sensationalism and reductionism of the media (LEITE, 2007), making it necessary to problematize this centrality of reasoning based on genetic determinism, in which it is believed that all characteristics, in addition to the physical ones, can be mapped through genes, such as emotions and behavior. In addition, showing how biotechnologies, through the provision of their services, are important for the dynamism of the economy and in the construction of subjectivities, as they interfere in the social life of the subjects (LEITE, 2007). The body has been the object of care and attention since the 20th century, becoming a medical challenge, but also a commercial one (SOHN, 2009).

Between therapy and aesthetics, it is the desire for a certain biological charge that prevails. A certain genetic set that is taught in the curricula as being desirable and, added to political, economic and social processes, produces a cultural intelligibility that defines what counts as a qualified body, which sells us to the subtle processes of exclusion and racism. Biology curricula, when they allow themselves to be seduced by the discourse of progress and improvement, help to compose harmful fascist desires that find loopholes in Brazilian reality. The contemporary fascism that plagues everyday life, as highlighted by Duarte (2009, p. 40), has “an insidious and discreet character” and “is no longer associated, exclusively, with the problem of state racism”. Fascism as what “is in us, which harasses our spirits and our daily conduct, the fascism that makes us love power, desire this thing that dominates and exploits us” (FOUCAULT, 2006, p. 134).

We see, from provocations about the practice of biotechnological tests so common to biology curricula, statements that naturalize genetic patterns, that define good genetics and bad genetics, that conceive the knowledge-power of science as salvationist, as hope for the population -species. Only when such statements are problematized as to the similarity of fascist and Nazi regimes, do the research participants ponder their uses and ties to totalitarian regimes. This shows the close relationship between government and the production of desires. After all, “power was not exercised purely and simply by the dictatorship of a single man, but vast parts of the population were invested in hateful and intoxicating forms of power, such as the power to kill, to confiscate, to report, to violate” (DUARTE, 2009, p. 37).

To propose problematizations of the knowledge that they carry with their training is to think of a curriculum of unlearning the norms to undo “an entire system of reasoning that has been triggered in the curricula” (PARAÍSO, 2016,

p. 209). When they rethink, together in the encounter with the other, the gendered, racist and normalizing reasonings that inhabit scientific knowledge and its technologies, they open themselves to other learning, materialize a non-fascist education. As brought up by Macedo and Ranniery (2018, p. 747) regarding curriculum policies, perhaps queer “allows us to invoke a radical opening of ‘all’, which, instead of presupposing identity, may arise from their relational condition, from the relationship with otherness, from a link with the other”.

Another disturbing issue was abortion to those who consider the embryo as life. Thus, they were inquired about what and when it would be abortion in the techniques at hand:

Cyborg: *I see it as something that can benefit the family. Even more in the world we live in, a world that works a lot on beauty, sees this issue of aesthetics as something superior. In that case abortion, I believe that makes things easier.*

Major: *I am against abortion for other reasons, except in specific cases of the law, for example, in cases of rape.*

Ava: *It depends on each person, how they see life, and then they bring up, for example, [the matter of] who has the right. The mother has the right over her body, and then she has the right to have the child or not. How about the child? What right does the child have? Not only [the child] loses the right to live, because all the experiences will be ceased, but also gains the right to die.*

Robocop: *Each case is different, guys. You take the woman who is raped, you want her to continue the pregnancy, then the child is born, and she begins to hate that baby.*

Ava: *But if abortion were legalized it would be concerning each case.*

Robocop: *Yes, exactly. When I said that I am in favor, I did not mean that the person would get pregnant every month and keep on having abortions. It is not only with abortion in case of rape, but also in those cases which it is pointed out that the baby has little time to live, dying at the age of one. Why let parents suffer? Because of our ego or the religion that says: let it be born and suffer for a year and screw that.*

Ava: *And who is worth more? The most valuable life, that of the mother or that of the child?*

Robocop: *Life is a very broad concept; it will depend on what you understand as life. If in a genetic test you discard embryos, why can't you abort one?*

Rachael: *What about the experiences that this child could have had and were ceased?*

Most of the participants manifested their discontent with abortion in many situations, marital or not. However, it was played down when the term embryo disposal was used and when the benefits it could bring to the species were pondered. After all, “those who constitute a sort of biohazard to others are legitimately killed (FOUCAULT, 1998, p. 130). It is in this point that Duarte (2009, p. 42) argues about a transformation of racism, “which ceases to be mere hatred between races or expressions of religious, economic and social prejudices”, to thrive, preserve and intensify the life of the winning biological entity.

Some works point that PGD not only brings with it a scientific nature which it is set out to – insure quality of life to those who have been through this test, bearing in mind that the genetic diseases that could inflict the subject’s life will no longer be part of his or her genotype and phenotype – but also, involves other pertinent issues like abortion and eugenics (MAURON, 2015). Thus, when asked what moved them the most towards the choice of performing this test, the answers were as follows:

Robocop: *The issue of omitting information is a downside. They discard embryos that are not “good” and do not warn us. They make this omission because they know that there are people against abortion and who may not accept these techniques. If a person is against an abortion, imagine 11 or 14 at once? (Laughs)!*

Ava: *A lot of people do not have that information when they use these techniques. That the one that worked will progress and the one that went wrong or failed is discarded.*

[Mediator: And does this disposal generate any feelings for you?]

Ava: *Killing lives. Because it is from the cell that I consider as life, because if these cells develop, they will generate life, in relation to the moment of fertilization.*

T-800: *These embryos I consider to be life. I think that life begins with fertilization.*

Ava: *It’s just that we think that life is only because of the person’s rational thinking, the individual as a social person and does not have the point of view which there are people with difficulties, such as mentally disabled people. There are people who consider them irrational because they do not develop some skills, they cannot think straight, they do not have cognitive development. So, would that not be a life?*

Rachael: *In almost everything we say, we are emitting a eugenic principle. Because when a woman is pregnant, we say: being born healthy is what matters. And why not say: being born is what matters? It means that you would not accept it if the baby came with some kind of disability. It is like Ava said, does [life] stop being life because of a disability?*

Cyborg: *Religion does not favor this technique. I see it as something cool, because the family may not be really prepared for a new being, which might often be unhealthy.*

Cyborg's report, on abortion being a controversial topic and religion not favoring this practice, corroborates the current debate on the decriminalization of abortion based on constitutional premises and theological and philosophical reflections. Until this moment, termination of pregnancy is only allowed in cases where the fetuses generated are anencephalic, pregnancy resulting from raping and pregnancy which endangers the mother's life. This year, the express majority of the Federal Superior Court denied the request for the right to terminate the pregnancy of women infected with the Zika virus (SENADORES..., 2020). Although there is a consensus on what refers to the end of life (brain death), in scientific discourse there is no consensus as to when it starts. Within religions, many speeches are produced and try to legitimize their power. However, there is also no consensus on when life begins (BARCHIFONTAINE, 2010).

Thereby, the group participants were asked about the concept of life and wondered whether embryos can be considered individuals or an object of research:

Cyborg: *In the act of fertilization of gametes.*

Major: *From the union between gametic cells that fertilize. Although the existing life in that segment is only structural, but it will take shape and senses with the cell division processes.*

Ava: *From fertilization it is already considered life.*

Robocop: *The beginning of life is at birth. I think a little earlier, when the individual manages to have a structure that allows him not to depend on the mother's body.*

T-800: *I think that life begins with fertilization.*

Rachael: *I have the pre-zygotic philosophy. I believe that when there is fertilization, the formation of the egg cell, I believe that there is life there, but without an intelligent principle, it is just a matter of cell division, but there is life there.*

The statements of Cyborg, Major, Ava, T-800 and Rachael, may be based on both a genetic view of life; in which it is formed from a cellular structure that has a unique genetic code (CESARINO, 2007); as they may also be appropriated to religious discourse. The Catholic Church defends human life

from this moment on and does not corroborate embryo manipulation or abortion (BARCHIFONTAINE, 2010). For Hinduism, life begins with fertilization, where the soul and the matter meet. In this way, the embryo is considered to be human, because it has a soul. Regarding abortion, Hindus tend not to accept it, except when pregnancy compromises the mother's life (BARCHIFONTAINE, 2010). The statement that "the beginning of life is when the subject creates a structure that allows the individual not to depend on the mother's body", is based on the perspective of ecological life, which was determined by the United States Supreme Court for authorization of the abortion (CESARINO, 2007).

The legal and ethical discussions about the properties of the genome began with the debates of the Genome Project and go through issues that are associated with the body, such as cloning, surrogate mothers, organ grafting (KECK; RABINOW, 2009), as well as body-species, racism, political economy (FOUCAULT, 2008). As in the sciences and religions, among the group participants there was no consensus on when life begins, an enunciation called to justify whether or not it is abortion. It is curious, however, that this discourse does not have the same strength when it comes to making the living confronted with "living life": scientific discourse gives way to the religious in attempts to explain what a body would be authorized or not to do.

Science, religion and morals will always be in dispute in the curricula when bodies and life are in dispute, and we do not intend here to indicate whether one or the other should be more or less present, because what we seek to destabilize are the prescriptions, the fixity, the conducts that the curricula can exercise. With the provocations raised in the focus groups, we wanted to see a curriculum that happens, which is in the university, but also in the media and in the church, that always evokes standards, but that can also broaden your senses and combat desires for exclusion, racism and fascism when in contact with the multiple. Curriculum is uncontrollable political, ethical, and aesthetic territory that, if used to regulate and order, can also be a territory of escapes of all kinds" (PARAÍSO, 2018, p. 13). Curriculum that embraces the obscene novelty of life, in the sense of what is left out of the scene in educational spaces, recomposing in them other bodies in unlearning processes (VASCONCELOS; CARDOSO; FÉLIX, 2018).

Concluding remarks

Among phenotypes, genomes, fertilization techniques and genetic selection criteria, we were attentive in the development of this research to the

constructions that were produced around the subjects of biotechnology and their ways of looking at life, patterns, racialized characteristics, diseases, deficiencies and genetic diversity of populations. Subjects of a biological curriculum that hierarchizes, seeks homogeneity, and traverses genetic patterns. Curriculum and subjects that, in content of genetics or developmental biology, update concepts of monstrosity, define abjections, potentiate desires for a pattern and make our inventive daily lives unfeasible.

We problematized the need to address educational aspects and their relationship with biotechnology, as well as the manufacture of standardized bodies in curricula. In addition, we question the formation in biological sciences regarding the circulation of hegemonic discourses about life and its ways of being lived. The concern that have cast on this need is based on the relevance of the philosophical, historical, and biological character involved. In the afternoons of focus groups that we aim to narrate, we saw subjects crossed by biological discourses that rowed for authority to discuss, define, and manipulate life. There, we seek, above all, to denaturalize the discursive matrixes committed to hierarchizing subjects, to establishing sick and non-sick; disabled and non-disabled; abject and normal identities.

In a formative space in which they were able to report their existences, in an exercise of interpellation with the other, almost always imbued with discomfort when recognizing themselves in reckless speeches, it was possible to perceive that the subject “is formed in relation to a set of codes, prescriptions or norms and does so in ways that not only (a) reveals the constitution of the self as a type of *poiesis*, but also (b) establishes the creation of the self as part of a broader critical operation” (BUTLER, 2015, p. 29). Butler, when analyzing processes of reporting oneself, which is an encounter with the intelligible other, offers the possibility of broadening educational horizons, of thinking about training curricula as dispossession. After all, “creating yourself in such a way as to expose these limits is precisely to engage in an aesthetic of yourself that maintains a critical relationship with the existing norms” (BUTLER, 2015, p. 29). A dispossession-curriculum that exposes the biological-fascism-self, highlights the subjective contingency, and expands the ways of life.

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