

THEMATIC SECTION: FAUNA, FLORA, OTHER
LIVING BEINGS AND ENVIRONMENTS IN
SCIENCE AND BIOLOGY EDUCATION



Abominable Loves between Strangers

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ABSTRACT – Abominable Loves between Strangers. How can Biology teaching rewrite life's logic from the relationship with beings that do not generate any ethical appeal? Is it possible to produce queer worlds in the ethical space of nature? How to perform an ecological poetics of intimacy in Biology teaching? How to love in times of radical ecological transformation? These issues are discussed in this paper from a non-disciplinary approach to explore the teaching of Biology as the art of cultivating tangled stories, in which alien beings have the potential to disturb the overwhelming stories of tragedy that orbit around *Anthropos* with disquieting and generative reports of an aberrant interspecies love.

Keywords: **Queer Ecology. Love. Anthropocene. Environmental Poetics. Erotism.**

RESUMO – Abomináveis Amores entre Estranhos. Como o ensino de biologia pode reescrever a lógica da vida a partir da relação com seres que não geram nenhum apelo ético? É possível produzir mundos *queers* no espaço ético da natureza? Como encenar, no ensino de biologia, uma poética ecológica da intimidade? Como amar em tempos de transformação ecológica radical? Essas questões são discutidas neste artigo sob um enfoque indisciplinar para explorar o ensino de biologia como arte de cultivar histórias emaranhadas, nas quais seres alienígenas têm o potencial de perturbar as histórias avassaladoras da tragédia que orbitam em torno de *Anthropos* com relatos inquietantes e generativos de um aberrante amor interespecies.

Palavras-chave: **Ecologia Queer. Amor. Antropoceno. Poética Ambiental. Erotismo.**

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Bichos escrotos saiam dos esgotos
Bichos escrotos venham enfeitar
Meu lar
Meu jantar
*Meu nobre paladar*¹ (Titãs, 1986).

Our viruses cause us to form a rhizome with other animals
(Deleuze; Guattari, 2011, p. 27).

Like many, we found ourselves celebrating Paulo Freire's centenary. The famous theme of the pedagogy of love was reactivated and became the main value for evoking a *pedagogical eros* in order to "[...] live a *life* in order to *expand* it, *never to limit* it" (Kohan, 2019, p. 123). However, as we learn from Garcia (2002), a certain conservative recalcitrance is guarded against love, because Freire's work was used and because it can be used, therefore, to articulate a subjective engagement with the powers in favor of conducting the conducts within an ascetic morality. In the climate of resumption of love, we felt attracted to shift the criticism to the moral centrifuge of the language of pedagogy, in the expression of Taubman (2009), without noticing that this did not matter much. Love demands that we season the writing with a little more pepper: the refusal to elide it in the emancipatory projects that this language guides. We no longer write to save society. Informing, denouncing, projecting are speech acts happily to be converted into complete decrees of the victory of the language of pedagogy. Well, if love is about "[...] creating, worldwide, equality (presupposing it) from difference" (Kohan, 2019, p. 137), perhaps difference can be an antidote to the risk of the moralizing conversion that haunts this text².

2022

We perform, in these pages, an experiment in writing by montage: fragments overlap and intersect with changing figures that do not form a stable whole, but, among them, certain marks of argumentation are identifiable. This option is used to walk through Kirksey's (2019) invitation to immersion in interspecies love. In our understanding, this movement can rewrite the logic of the meaning of life in Biology teaching in a radically open way, in which the rearrangement is not what we control, but what we fear. By aiming to reimagine affective formations and the ethical-political mobilization of queer studies in Biology teaching, we deploy a theorizing exercise within an interdisciplinary zone of onto-epistemological orientation. Although we rely on a set of intercessors from literature, music, cinema and scientific practices, it is not an analysis or an explanation, it is a textual architecture whose effort is to decenter and that "[...] 'loops the strands' of incommensurate accounts and which weaves present, past, and future in retelling the story" (Hartman, 2021, p. 111). In order to think about the inhuman, Muñoz (2015, p. 209) says "[...] the queer work of the immeasurable is necessary" and the immeasurable comes in fragments.

Here's why we couldn't extirpate the mess and, all along, repetitions occur between parts. By embracing the immeasurable, this queer experiment "[...] takes us back to previous moments, moving towards embarrassing utopias, side by side with ways of being and belonging that seem, at first sight, completely banal" (Freeman, 2010, p. xiii). It arises from this why ideas such as that we write without certainty of destination, without any real evidentiary commitment and that we flirt with the borders of fiction (Ranniery, 2018) fascinate us. If any order is present, it should be imposed on teaching Biology the "[...] work of coordination and coexistence between multiple entangled stories" (Ranniery, 2020, p. 729). What if we add love, care, desire and sex to these stories?

When we announced the nature of this text, we tried to combine two apparently contradictory impulses: that of maneuvering our response to the dossier call and that of asking about the ethical place in the teaching of Biology for those that Rose and Van Dooren (2011) named the *unloved others*. One way to honor the call is to add layers to the question: "What of the unloved others, the ones who are disregarded [...], of the disliked, those who may be specifically targeted for death?" (Rose; Van Dooren, 2011, p. 1). And what about those creatures who, despite all the immunizing prophylactic grammar and their "[...] map drawn to guide recognition and misrecognition of self and other the dialectics of Western biopolitics" (Haraway, 1991, p. 203), not even we can kill or extirpate once and for all those that we cannot even see, that reproduce laterally (Ahuja, 2015), around and within us, on all sides, and for whom distinctions between life and death, life and not-life, seem to make no sense? What happens to the stories told by the Biology teaching if taken from the point of view of love for and among creatures that do not *a priori* generate any ethical appeal?

We are referring to a lineage of alien beings that constitute the reservoir and powerhouse of an entire pandemic imaginary, interconnecting the end of the world, extinction, media culture and scientific practices (Lynteris, 2020). About the figure of the alien, Helmreich (2015, p. xi) comments: it is "[...] a sign of uncertainty about what the sea can tell us about life on Earth and the place of humans in this realm". The author adds:

Neither fully self nor other, the marine microbe is an alien whose purposes we do not know – a stranger who may be friend or foe, who may offer the unexpected communion of kinship, or the irreversible rescripting of life as we know it (Helmreich, 2015, p. xi).

What if this unexpected production of kinship and the rewriting of life already go hand in hand? What if this irreversible indeterminacy depends on creatures that proliferate in uncertain scenarios of emergent ecologies? – a term that Kirksey (2015, p. 4) uses to describe "[...] parasitic invasions that destroyed established communities while simultaneously opening up new possibilities for flourishing". Vast feminist literature³ has shown that the responses to parasitism, toxicity and

contamination arising from catastrophic environmental changes evoke normative assumptions of gender, sexuality and race, but these works put into play request: to take a less apocalyptic way of the relations between sex, body and environments and thus loosen proprietary claims of autonomous subjectivity. We wish to do justice to this legacy and provide a conjuration of mutual constitution that takes into account the polymorphous perversity of microbial micronthologies, as Hird (2004) writes, in order to reach an alliance with the real conditions of life.

Far from positioning Biology teaching in the name of an aseptic order – the world is doomed unless we clean it up – we offer a more pragmatic theorization of Biology teaching as rewriting the relational texture of life in the face of the alien beings which we are “becoming with” (Haraway, 2008) and the queer nature of the ecologies we belong to, as we find ourselves within the collapsed scales and convulsed environments of these beings’ reproduction. Whatever we become, whatever futures await us, the process of “becoming with” includes these aberrant beings. This is a process that is not limited to sexual reproduction, but “[...] permeates organisms and undermines their integrity, a life indifferent to the bodies that it traverses no less than to the subjects it disrupts” (Lapoujade, 2015, p. 22). Ahuja (2015) suggests that to *queerize* is to insist on a tangled affective materiality that interrupts the continuity of space and time and bodily wholeness, as intimate atmospheres pervert the world as a place of compulsory reproduction of the “autobiography of the human species” (Derrida, 2002, p. 58).

Therefore, eroticism surrounds this text. Just remember the words of Bataille (2014, p. 62) when associating libertine excess with an alternative and stating that “[...] in eroticism, even less than in reproduction, discontinuous life is not condemned [...] to disappear: it is just called into question. It must be disturbed, disordered as much as possible”. Considered from this key point, these alien beings are not here as a representation of horror, revulsion or disgust in Biology teaching, they are here because they constitute the inner experience of an erotic ecology, the disturbing presence of a stranger in us from which we can learn ecologically about sex. As Bataille (2014, p. 62) points out: “Man achieves his inner experience at the instant when bursting out of the chrysalis he feels that he is tearing himself, not tearing something outside that resists him”. To love the unloved is to go through the experience of opening up queer worlds, paying attention to the way they drag forms of entanglement between bodies according to what Lowe (2015) called the intimacies of empire, circuits, connections and mixtures eclipsed by the operations of universalizing the liberal individual and owner of oneself and the mononuclear and uniparental family.

The Lover

The matter of love can sound corny when its declared end, Illouz (2019) argues, it has become the affective lexicon of late capitalism. Despite everything, we maintain the appeal, borrowing from Haraway (2016), to remain with the problem of paying attention to how, between

whom and in what direction love engages us in the teaching of Biology. It is worth noting, however, that we are not interested in love as an action of connection between human subjects. We are interested in love as an erotic force so that we can live, a force of “[...] dis-identification that operates under the signifier of ‘life’” (Butler, 2021, p. 133) and that shines the carnal connection of multiple stories, not always convergent, between beings forced to live together and to achieve an unusual agreement of interdependence and care. By presenting the concept of dis-identification, Muñoz (1999, p. 23) sought to bring to light the practices of making these queer worlds “[...] through the transformative powers of sex and sexuality” from within – and not against – the political sphere that seeks to dispose of them, where and when the distinctions between the private and the public, the self and the other, the inside and the outside collide.

In this blurring, love in Biology teaching allows us to retake the “ethical space of nature” (Alaimo, 2017, p. 909) not dominated by humanist and sanitized understandings of gender, sexuality and education⁴ and activates the queer potential for creating ways of life. Queer as performed here is not so much about analytics or a theory, but an exercise in thought that dreams of expanding Barad’s (2020) contribution on the ethical mandate of nature’s queer performativity, and obliquely moves us to reactivate, in Biology teaching, a way of managing an erotic and intimate relationship with difference, never limited to the interpersonal space. Queer is a matter of intimacy, of becoming intimate with other beings, living and non-living. And, even though Haraway (2016) insists that in order to imagine the worlds in which we come to live, we depend on pedagogical practices and cosmological performances to make relatives, it is necessary to speculate the pedagogical meaning and how it can disarrange what Ferreira (2005) characterized as rhetoric modernization of Biology teaching.

Do note: the name of this section situates our argument with the autobiographical work by Marguerite Duras (2020), *The Lover*. When, at the age of 70, in the 1980s, the writer fictionalizes the memories of 15 years, we are taken to the most intimate margins of the colonial empire of France in the territory that, today, is Vietnam, through the history of sexual initiation, involving money and sex, of a young Frenchwoman born in Saigon and of an old and rich Chinese merchant obsessed by his love for her. In the moral and physical decay of the family after the death of the father, the young woman’s stories immediately feature the lover as an index of the perverse logic of relations between family, patriarchy, racism, colonialism and capitalism that violently expropriate land – the infertile swamps that the mother invests all the family’s money to soon lose it – and how they are subjectively transfigured – the cruel and vile older brother becoming addicted to drugs, the mother going crazy, the frightened and fragile younger brother. But that’s not all.

I see the war as I see my childhood. I see wartime and the reign of my elder brother as one. Partly, no doubt, because it was during the war that my younger brother died: his

heart, as I've said, had given out, given up. As for my elder brother, I don't think I ever saw him during the war. By that time it didn't matter to me whether he was alive or dead. I see the war as like him, spreading everywhere, breaking in everywhere, stealing, imprisoning, always there, merged and mingled, with everything, present in the body, in the mind, awake and asleep, all the time, a prey to the intoxicating passion of occupying that delightful territory, a child's body, the bodies of those less strong, of conquered peoples. Because evil is there, at the gates, against the skin.

We go back to the apartment. We are lovers. We can't stop loving each other (Duras, 2020, p. 70).

The lover mobilizes the excess of these relationships – both always give in to physical attraction, even if forbidden, until the final departure. In the afterword of the work, Perrone-Moises (2020) notes how the delicate sliding of verb tenses shuffles present, past and future. The time of the lover's memory is the time of the present and recalls how an “[...] ethics of entanglement involves possibilities and obligations to/with refigure the material effects of the past and the future” (Barad, 2020, p. 242). While it is difficult to claim ecological concerns in Duras's work, we can productively re-read it as opening a gateway to what Chrulew (2011) identified as one of the central ethical questions of our time: How can we love in times of radical ecological transformations? Can we go back to the apartment in front of the sprawling war and find love within the small intimate space of our homes and even our bodies?

Before the experience of the COVID-19 crisis transfigured homes, Ahmed (1999) pointed out how the home is the space where we move to. By following the experience of women's immigration, he criticized the spectacular idea of nomadism, according to which the immigrant subject would be inherently transgressive, and argued that it is through an unusual strangeness of feeling at home that the possibility of immigrant communities becomes lived. Cheah (2006) offered an even more systematic critique of this line of thought, stating that the focus on the migration experience and the appreciation of cultural hybridity say more than “[...] the success of culture as a utopian project [and] depends on an anthropocentric conception of nature as a totality in harmony or in accordance with human normative interests. [...] In other words, the nature of the *anthropos* is to be free from nature” (Cheah, 2006, p. 100). This position not only inflates the domain of culture, but also, argues the author, ignores bodily vulnerability and the transformation of matter into a resource. Between both criticisms, we are impelled to suspend the concept of the human dependent on Enlightenment incursions and the insistence on taking it for dual alterities that, by proclaiming internal and external differences to humanity, reinforces this category.

We are in the field of exposure to what produces strangeness not because it makes the inhuman or the strange familiar, but because it maintains a coexistence with the unfamiliar. The stranger is no longer another outsider. In a comment on the concept of the unfamiliar in Freud's (2019) work⁵, Andrade (2021, p. 2) suggests that the unfamiliar is

the irruption into reality of what could only be in fantasy, “[...] the marks of cohabitation or coexistence of both, without one eliminating the other”. In this sense, perhaps, the teaching of Biology can be involved with fiction literature, in a broad sense, since, as Le Guin (2021, p. 21) insists, “[...] all serious fiction [...] is a way of trying to describe [...] how people relate to everything else in this vast bag, this barricade of the universe, this womb of things to come and this tomb of things that were, this never-ending story”, which includes connection and to live with the unusual estrangement of intimate relationships between what Haraway (2021) called companion species which, she noted, have no reason to be reduced to domestic animals.

However, even though our homes are full of unloved invisible beings – viruses, protozoa, bacteria, fungi – and even visible beings – worms and insects –, as soon as they are spoken of, love, intimacy and desire are left aside. It is useful here to resort to another notation by Perone-Moises (2020, p. 130) on how, in Duras’ writing, sexual enjoyment with the lover is compared to the sea and depends on recognizing the importance of water, “the origin of life, power of destruction”. Duras’ memories consist of a kind of environmental poetics, in the words of Morton (2007), through which the intertwining of sexuality, water and music offers a contribution to the discourse “of politicized intimacies with other beings” (Morton, 2010, p. 266). When Chopin’s waltz erupts over the sea on a moonlit night, the young woman recognizes her love for her lover, in “[...] an echo [that] can only reach our ears after the sound has caused the medium to vibrate” (Morton, 2007, p. 76).

There wasn’t even a breeze, and the music had spread throughout the black steamer, like an imposition from heaven that no one knew what it referred to, like an order from God whose tenor was unknown. And the young woman had gotten up as if, in turn, she would kill herself, in turn throw herself into the sea, and then she had cried because she had thought of that man from Cholen and suddenly she wasn’t sure if she hadn’t loved him with a love which she hadn’t realized because he had been lost in history like water in sand and now she only found him again at that moment when music was thrown into the sea (Duras, 2020, p. 108-109).

At this point, the figure of the lover can be associated with the feeling that sprouts in the kelp forests of South Africa in the documentary *My Octopus Teacher* (2020). There, the language of pedagogy works to interdict an unexpected love story, which at first sounds impossible, between a scuba-diving filmmaker and an octopus specimen – an interdiction exacerbated in the Portuguese translation which, depending on the gender mark, refuses to be a female. However, the image makes it clear that the octopus is only a teacher because there is an unknowable erotica between different beings who are not engaged in a relationship in the same way. As Nodari (2012, n. p., emphasis in the original) reminds us, “Plato does not banish the poets from his ideal Republic for distancing themselves too far from the truth; he decrees their purge for

the simple reason that they make men *effeminate*, feel *sympathy* for the characters, *with-feel* their affections". If, in the ecological metaphors of literature described by Rohy (2014, p. 105), homosexuality has long appeared "[...] as a kind of parasite, feeding on the failure of normative sexuality", environmental poetics is a performative act of storytelling that takes advantage of the failure of gender and sexuality norms, because where the feminine and homosexuality converge, there is a *enviamento*⁶ (faggotization) of nature.

We privileged, therefore, the figure of the lover to carry out, in the teaching of Biology, a refusal to tell stories within three normative axes of heterosexuality as a political regime: the linear unfolding of biological events, the integrity of the division between nature and culture and the alterization of difference⁷. In a sense, these norms fold the natural back into the cultural, while the queer exercise recognizes a strange intimacy and sheds light on an alternative according to which "[...] there is no outside of nature from which we can act" (Barad, 2020, p. 341). This poetics disfigures human intentionality. When we relate *to*, we recognize the imbrication with the stranger: "[...] the environment is not located somewhere out there, but is always as close as the skin itself" (Alaimo, 2009, p. 11). Even more, it involves the risk of engaging with what Sprinkle and Stephens (2021) named the ecosexual position. The authors, active in the movement for the rights of sex workers, are the directors of the documentary *Water make us wet* (2021). In both, they appeal to Earth as a lover and allow us to weave an intimate erotic choreography with the alien worlds, monstrous children of the Anthropocene, in order to confront the ongoing ecological devastation.

Love, Blood and Guts

In the short story *Bloodchild*, the science fiction writer Octavia Butler presents an isolated colony of earthlings who escaped to an "inhabited world, outside the solar system" (Butler, 2020, p. 48). Faced with the delay in the arrival of reinforcements, the earthlings were forced to reach an agreement and think about what they could offer in exchange for a living space. The place found is a community of alien beings like insect *larvae*, the Tlics, and their settlement is only possible when both species give up the war and form an alliance. Earthlings are now allowed to establish homes and run businesses on a reservation guarded by Tlic servants. As rent for these safe accommodations, they must make a concession: each Terran family must allow a female Tlic to adopt a child, usually a boy, to participate in the reproduction process. The Tlics, which were on the verge of extinction, found a chance for the continuation of the species in terrestrial bodies. In exchange for protection and care, men are destined to become hosts for Tlic eggs.

In an essay on Butler's work, Allison (1990, p. 471) stated that her heroines are "independent, stubborn, difficult and insistent" and avoid peace and solitude at all costs, forging connections to effect social and cultural changes. The relationship between T'Gatoi, the female alien,

and the boy Gan, the center of the story's action, radicalizes this perspective. About Butler's characters, Ferreira da Silva (2021a) also comments on how they speculate about worlds of difference without separability, resorting to three descriptors, namely, transversality, traversality and transubstantiality and how they bring to light a radical transformation not only of form but of substance of matter. Gan, for example, was chosen before his birth to gestate the children of T'Gatoi, who protects and feeds the boy's family – mother, sister and brother – with eggs with hallucinogenic properties. The description of T'Gatoi's authority may sound repugnant, but Butler (2020), in a comment that follows the tale, refuses the common reading, according to which this would be a story of violence and expropriation. Her refusal interests us to synthesize how, while the people of Gan faced reproductive slavery in the past on their planet, the interspecies' reproductive present on the planet Tlic allows earthlings and Tlics to find a “space to consent to symbiosis” (Bollinger, 2007, p. 332) and connect as partners.

This is a concession that takes place through bodily vulnerability, the visceral gestation of strangeness, since earthlings and aliens depend on each other's bodies to continue living. Taking, however, this relationship of love and care as ecological interdependence depends on considering how this reproductive interweaving replaces ecology as a “[...] complicated web of dissonant connections between bodies” (Bennett, 2010, p. 4). And if we arrive at the theory of symbiogenesis, at least as formulated by Margulis and Sagan (2002a), it is because, as with T'Goi and Gan, together with the microbial worlds, we are facing a different way of facing sex, reproduction and ecology without the “[...] fear [of] the formation of new alliances and the tying together of unforeseen lines of force” (Foucault, 1981, p. 38). For Hird (2004), the central argument of symbiogenesis theories is that sexual reproduction arrived late on the evolutionary scene, as an effect of several symbiogenetic fusions and, therefore, the type of sex practiced by some animals, including humans, is a result of the failure of organisms to exchange DNA by other means. Sexual reproduction is nothing more than the effect of contingent circumstances and not evidence of greater complexity, revealing a temporality that surpasses and precedes us.

At one point, an earthling, Bram Lomas, arrives at Gan's family home close to death, poisoned by Tlic *larvae* living inside him. Lomas needs his Tlic to remove the offspring from his abdomen and ease the excruciating pain of his tail sting. However, as it was not found, T'Gatoi cuts Lomas' body to remove the *larvae*. By assisting in childbirth, Gan recognizes himself for the first time as a penetrable body. Though he has been instructed his entire life by his earthling mother about his role in Tlic reproduction, Gan finds himself unprepared for the botched birth. As he watches the bloody maggots ooze through Lomas' flesh, Gan questions his role and realizes that while he and T'Gatoi share an intimate bond, he shares something Lomas has in common, bodily vulnerability. Butler (2020) herself insists that this is her version of a story about men getting pregnant. Perhaps, as Spillers (2021, p. 65) suggests,

this is the Gan boy's chance to engage with "mother's heritage" as a response to the violent forces he and his family suffered both on his home planet and in the early years of the Tlic planet. This connection disturbs kinship ties because "[...] it intervenes in the patriarchal structure of the Family" (Spillers, 2007, p. 302) that governs ethical and desired relationships and exposes the circumstances in which earthlings and aliens became intimate.

For this, earthling men join the toxically sexed beings of Ah-King and Hayward (2013), in which sex is a process continuously modulated by endocrine disrupting chemicals in response to environmental changes, exposing a shared vulnerability. In any case, both agree with Spillers (2021, p. 66) in denying the power associated with the phallus in governing the past and the present, "claiming monstrosity". Love between T'Goi and Gan claims an effervescent monstrous dance of carnal relationships of mutual ecological interdependence between and with alien strangers. In this terrain of bodily vulnerability, the head of the mononuclear family is cut off not only because the perception of penetrability is painful, but also because it is de-gendering. Still, it is no less erotic for that.

Yet I undressed and lay down beside her. I knew what to do, what to expect. I had been told all my life. I felt the familiar sting, narcotic, mildly pleasant. Then the blind probing of her ovipositor. The puncture was painless, easy. So easy going in. She undulated slowly against me, her muscles forcing the egg from her body into mine. I held on to a pair of her limbs until I remembered Lomas holding her that way. Then I let go, moved inadvertently, and hurt her. She gave a low cry of pain and I expected to be caged at once within her limbs. When I wasn't, I held on to her again, feeling oddly ashamed (Butler, 2020, p. 43).

This surrender interrupts the body as the individual property of a self-enclosed subject and reminds us that, whatever notions of autonomy and free will we may aspire to, we are vulnerable to each other. We do not affirm any novelty that Butler (2021) has not indicated in a world absorbed by the agonizing defense of the self as a fortress in the face of war and from which creatures seen as enemies to be exterminated arise. However, the passionate connection between the boy and the alien interrogates the narratives of reproductive sex and opens space for transversal stories in which the stranger is not pushed into the abjection zone, but cohabits with it. If Butler's ethics of non-violence (2021) implies diluting the body's individual boundaries, reproductive symbiosis assumes a bodily intimacy, in which the stranger is an erotic force of inhabitable displacement, from the inside, neither self nor other, in which difference is the emerging potential of a mutual and multiple webs of relationships between different bodies and environments. If Derrida's (2001) *différance* takes advantage of the Latin double meaning of deferring, postponing and spacing, in these strange intimacies, to differ is to alter oneself by incorporating the other, which, as Margulis and Sagan (2002c) showed, is what makes of the propulsion a symbiosis of life.

The love between Gan and T'Goi offers a visceral figuration of how strange intimacies characterize ecologies of devastation, not only articulating forms of queer agency immanent to inhuman creatures, but also demonstrating how the relationality of life is more unfamiliar than we think. In Bennett's (2010, p. 4) insistence, "[...] the extent to which human being and thinghood overlap, the extent to which the us and the it slip-slide into each other [...] we are also nonhuman [...]". From this vulnerability, an erotic resonance derives, an opening experience that is another name for a queer environmental poetics that emerged from the intimate friction between strange bodies and irrigated by the apparent perversity of investing in the unfamiliar. Gan's bodily act hosting the alien's eggs, the gesture of letting her penetrate him, is the condition to reach, finally, the "[...] the 'slantwise' position of the latter, as it were, the diagonal lines he can lay out in the social fabric allow these virtualities to come to light" (Foucault, 1981, p. 39). The transcorporeal erotic bond establishes lines of *co-operation* and *co-sharing*, and the in-human stranger becomes a condition for continuing to live.

Interspecies love is therefore not an insurmountable obstacle; it is an encounter without fusion or integration, without presupposing homogenization, "[...] but [which] refers to the encounter of heterogeneous people, who become others while continuing to be the same" (De La Cadena, 2015, p. 280). Through it, different beings are connected, but this connection is "[...] also the connection of their divergence, their becoming with what they are not without becoming what they are not" (De La Cadena, 2015, p. 280). The bodily interweaving of reproduction suggests that Earthlings' goal of achieving equality requires the promotion of a queer love, an alien intimacy as painful as it is enabling; a certain eroticism, stripping away the spectacular temporalities of crisis and transcendence. This involves telling this interspecies' loving entanglement in scenarios of devastation – species extinctions, but also of the silent obliterations of beings that could have existed, of stories that could have been, of stories that are yet to come, of stories that are not yet over.

A Speculative Title

Our title is a heretical combination. A part of it is extracted from a commentary by Butler (2020) on the tale when she states that "[...] in the foreground, it is a love story about two very different beings" (Butler, 2020, p. 43). Another part owes a debt to a passage from *A Thousand Plateaus* in which Deleuze and Guattari (2011) resume Jacob's (1983) logic of life and the comparison that the biologist makes between the transfer of genetic material promoted by viruses with the "[...] abominable 'couplings' dear to antiquity and the Middle Ages" (Jacob, 1983, p. 311). Still in the 1970s, Jacob (1983) already noticed that viruses are an essential component of the creation of life. In a review of this work, Foucault (2015a, p. 269) states: "The bacterium: [...] a pure repetition prior to the uniqueness of the individual. In the course of evolution, the living being was a reduplication machine, long before it was an individual organ-

ism". However, it is only since the 1990s that research in virology has brought significant connections about the role of viruses in the evolution of life on Earth beyond the perspective of disease. Although they constitute the negative limit of Margulis' theory of symbiogenesis, it is not paradoxical to include them in his statement about how microorganisms "[...] evolved innovations that we now associate with animals and plants: reproduction, predation, movement, self-defense, sexuality and many others" (Margulis, 2014, p. 93).

In a review of this literature, Villarreal (2005) suggests that viruses subvert the idea that multicellular life can exist without them and states that the introduction of one viral "other" is central to the evolution of life. Before the cell, there were viruses. Zimmer (2011) further notes that this "[...] idea that a host's genes could have come from viruses is almost philosophical in its strangeness" (Zimmer, 2011, p. 48). We are virally constituted.

We like to think of genomes as our ultimate identity. [...]. But if most of an organism's genes arrived in its genome in a virus, does it even have a distinct identity of its own? Or is it just a mishmash of genes, cobbled together by evolution? It's as if the world was filled with hybrid monsters, with clear lines of identity blurred away.

Microbiologists have been getting used to the viral roots of the microbes they study for decades now. And as long as microbes were the only organisms with much evidence of virus-imported genes, we could try to ignore this philosophical weirdness by thinking of it merely as a fluke of 'lower' life forms. But now we can no longer find comfort this way. If we look inside our own genome, we now see viruses. Thousands of them (Zimmer, 2011, p. 48-49).

We also chose another epigraph taken from the song *Bichos Escrotos* by Titãs (1986). All this writing was motivated by a question derived from it: What if we teach Biology from the abominable loves between and for *scrotal [despicable] creatures*? In an edition of any Portuguese dictionary, as already pointed out in the first endnote, it is known: *scrotal*, in Portuguese, is a pejorative adjective for someone who or someone who does not have good moral qualities, is morally vile. *Scrotum* is also a noun to name, in human anatomy, the musculocutaneous sac in which the testicles and epididymis are contained. *Versatility of scrotal [despicable] creatures*: is within the figure of Man – in all its legal, political and economic extension – thus, with a capital letter, it is in his lower parts that a series of *scrotal [despicable] creatures* flourished, to the point of only being recognized, almost always, within a legion of moral aliens who find multiple animated possibilities of proliferation in the organic and inorganic conditions generated in scenarios of ecological dispossession. In these landscapes, we are faced with exorbitant circumstances, an aberration from the expected course, and the usual invisibility is catapulted to the surface of discourse.

As a result, we do not close our eyes to the unequally distributed effects of our economy of generalized domestication, as expressed by

Hage (2017), in which the racial, the colonial and the ecological meet, but this position may be insufficient if we take these *scrotal [despicable] creatures* and the worlds through which these creatures drag us only from the perspective of the “encounter with power” (Foucault, 2015b, p. 203). Since racism and environmental exploitation are inextricably linked, Hage (2017) demonstrates how our dystopian narratives are gripped by a white racial fear in which animals and other inhuman beings would suddenly take power. Nevertheless, the mind-boggling propagation of microorganisms shows the collapse of pure worlds and spoils the keystone of the tragic stories that befall the *anthropos*. Not to say that the ecological crisis does not exist, but that the announced end of the world is not the end of the world itself, only the end of a certain world, something that Krenak synthesized in “[...] the Earth can leave us behind and follow its path” (Ortega, 2020, n/p). The invitation for the *scrotum [despicable] creatures* to participate in the dinner or when they give us what to have for dinner leads us to Ferreira da Silva’s (2021b, p. 198) provocation of “[...] freeing our imagination and welcoming the end of the world as we know it”.

Safeguarding the distances, these creatures share what Collins (2016) called an *outsider within*. Collins (2016) appealed to how the position of black women provided a different point of view regarding subjectivity, family and society, urging them to embrace this position. The proliferation of *scrotum [despicable] creatures* in ruined landscapes frays the threads of a difference that would be on the other side, and makes us feel a strange difference within that (cor)rupture the body as a monist unit and brings queer worlds to light in their stories of unlimited intimacy. *Abominable loves between strangers* is, thus, a sign for how we are amalgamating two different readings: Butler’s (2018) on how to live together and the concept of unlimited intimacy derived from Dean’s (2009) careful ethnography of the *barebacking* culture among gay men, in which he describes the latent erotic possibilities in the encounter with otherness and in the opening of the body to a game with strangers. This practical-poetic game with strangers could well be included in the responses to the impossibilities of choosing who one is going to live with and in the obligations of taking care of the life of the other because we depend on it to exist, “[...] which means that ethics itself requires a certain disorientation from the discourse” (Butler, 2018, p. 21).

For Butler (2018, p. 21), this interruption is an “[...] openness to the unfamiliar, a dispossession of the previous ground, and even a desire to give in to what cannot be known immediately within the established epistemological fields”. *Scrotum [despicable] creatures* expose how the most vigorous and potentially productive processes that shape the world are not those that begin with the central epistemic actor of liberal humanism – the autonomous individual –, but begin with his disorientation and transformation within circuits of aberrant relationships and abominable associations that propel life. The “strange sexuality” (Margulis; Sagan, 2002b, p. 43) of microorganisms is a queer economy “as strange as science fiction” (Margulis; Sagan, 2002b, p. 43) for breaking the bio-ontological primacy of birth, growth and death and its repro-

ductive and linear sexual temporality. Margulis and Sagan (2002b, p. 51) continue: “[...] by indulging in non-reproductive sex, they [the bacterial] disseminated useful genes throughout the planet”, creating the conditions for eukaryotic life through “[...] a kind of genetic cultural transmission” (Margulis; Sagan, 2002b, p. 51).

For the authors, prokaryotic sex, with its variegated and violent stories of geologically entangled time, cosmic transmission and ontological alteration, was the condition for the emergence of other forms of life, being not only a disorder that emerges and takes its dreadful way in the shadows cast by the very project that desires and demands order in the first place. By altering the scale to biogeochemical systems and genetic flows, *scrotum [despicable] creatures* pose contamination and parasitism as an integral production of symbiotic landscapes of ecological interdependence. Moreover, as they exceed even the category of life, rather than figure in a deadly relationship that undermines it, it allows us to speculate the interconnections that “[...] formed a planetary axis of biochemical information” (Margulis; Sagan, 2002b, p. 51), an erotic scripture of Earth that takes us away from the operation of civilization annihilation, but towards involitional creation (Hustak; Myers 2012). This creation is the “chaotic force of nature, [...] the impredicative” (Halberstam, 2020, p. 3) and speaks of “much more unstable ecologies of embodiment” (Halberstam, 2020, p. 14) than the narratives of multiplicity of desires and bodies that the 20th and 21st centuries made us believe.

Our movement involves considering the viscerally carnal touch of this weird pedagogy of the intimacy of *scrotal [despicable] creatures*, whose insistent affective and material effects erode subjective enrenchment. Alluding to the abominable love between strangers can resonate a teaching of Biology that is more about performing the environmental poetics of a disturbed *living with*, responding to the effects of this mutual implication in devastated worlds, embracing the monstrosity that inhabits it, without resorting to abjection and producing relationships intimate with what causes us revulsion, without appealing to fear, but maintaining caution and, thus, making “a certain mixed effect of beauty and terror” appear (Foucault, 2015b, p. 202). In this baroque style, another question follows: Is there room in Biology teaching to tell these stories capable of awakening this visceral opening to difference from within, stories that make it possible to love *scrotal [despicable] creatures* or even love the aberrancy of the worlds that permeate us, that are reproduced through us and are constituted in our absence and on which we depend to continue living?

Cultivating Stories, Microbial Lessons

“May you also become someone who loves microbes”. With this call, the cell biology journal, *Cell* (2018, p. 1138), closes the editorial of a special volume on the fascinating life of microorganisms. Drawing from Robin Sloan’s (2017) novel, *Sourdough*, the two pages conclude that “[...] microbes with their diversity, complexity and range in all branches of

life have much to teach us about our own biology and existence” (Cell, 2018, p. 1138). In Sloan’s book, Lois Clary, a software engineer at a robotics startup based in San Francisco, California, recovers from the strenuous work in Silicon Valley, fueling herself with spicy soup and sourdough bread. Her meals are ordered at an illegal restaurant, whose owners, the baker Beoreg and his brother Chaiman, are immigrants from the Mazg people, a colony of pirates exiled from their home island who survived by eating bread made from a paste of flour and water colonized by bacteria and fungi. When the brothers are forced to leave the country due to visa issues, Beoreg asks Lois to take care of the yeast to feed and nourish it, and although she accepts the task, she has no idea how to go about it.

In 2020, natural fermentation bread won the public scene. Newspapers spoke of “*breademic*”, the fever of occupying oneself with homemade baking (Pereira, 2020). “How to make bread?” was, that year, among the ten most searched topics on Google and the first among culinary recipes⁸. The *Brazilian Wheat Industry Association* even issued an official note on how there was no risk of product shortages in the Brazilian market, although the disarticulation of actions between federal, state and municipal governments could jeopardize distribution to some regions of the country (Barbosa, 2020). However, *Sourdough* is more than a story about the adventures of a robotics programmer learning to bake bread to nourish her body and mind. It doesn’t take long for Lois to realize that the new goal is different: it’s no longer about solving one problem once and for all and moving on to the next, more compelling one, but solving the same problem over and over again. “So the problem was ongoing. Thus, the problem was perhaps the point” (Sloan, 2017, p. 17) – she says.

Sourdough makes the very exercise of staying with the problem and tracing the material-affective connections between bodies in different environments, temporalities and scales. It is no coincidence that Beoreg refers to yeast as a culture in the biological sense: a collection of cells that must be cultivated in order to flourish. It is necessary to take care of them, become someone capable of loving them. Lois’ subsequent forays denote how necessary story-sharing is for that love to blossom – she and Beoreg exchange countless e-mails – as the yeast opens up an intoxicating incarnate exchange. “It’s just a story” (Sloan, 2017, p. 67), writes Beoreg in one of his last e-mails to Lois, “there is another” (Sloan, 2017, p. 67). Lois learns from these invisible creatures, the fermenting bacteria, which, as Sagan (2021, p. 12) notes, “[...] show the versatility of life and insinuate the evolutionary persistence of some invisible beings from a biosphere that initially encountered little or no oxygen in the atmosphere”.

At a certain point, Lois is invited to sell the bread she started to make in a clandestine market, in which all kinds of wild experiments with food are carried out, the Marrow Fair. The event is organized by a mysterious benefactor with the eponymous name, Mr. Marrow, who sells a range of products, such as cakes made in a bioreactor and honey from Chernobyl, and whose desire is to disrupt the food chain. “It also looked like an empty ship and, as a rule, you don’t enter an empty ship

without first knowing the fate of the crew” (Sloan, 2017, p. 147). Without batting an eye, Lois enters the fair, tastes the honey, and soon the market of Mr. Marrow becomes a festive ritual through the fermented drink. It becomes clear that it is through telling fervent stories of disidentification and alteration of worlds that we can compose “a more livable cosmopolitics” (Haraway, 2016, p. 16). We are here approaching Tsing (2019, p. 133, emphasis in the original) and how “[...] telling such stories offers us a reminder of the multiple scales and trajectories tangled up in the creation of these social landscapes. [...] *many stories, human and otherwise, come together in places of more than human sociality. Just one story isn't enough*”.

However, telling multiple stories is a question full of difficulties, if not easily engulfed by the language of pedagogy, assuming “an anthropomorphic taming, a moralizing subjection” (Derrida, 2002, p. 70), which would give access to a self-mirroring journey of learning. One of the difficulties is both in the faith, which such language evidences in the redeeming capacities of humanism, and in the trust deposited in the founding distinction between the self and the other. This distinction is eroded by the terrible poetic oscillation of intimate ecologies gestated in landscapes ravaged by destruction and its queer reverberations. The sequence of actions and interactions, involving Lois in the preparation of bread with natural fermentation and the ritualistic and hallucinatory experimentation that the interpellation triggered, led to rearrangements, giving rise to the operation of resuming the past, of reoccupation with microbial worlds and the processes of re-singularization of interspecies' care and love.

Teaching Biology could be a way to cultivate tangled stories to feed these strange intimacies; love stories, that is, from bodily vulnerability to a passionate erotic connection, whose infestation leaves marks on us, in spite of us; openings capable of interrupting “[...] our relative independence and our separation from each other [exacerbated] by the North American spirit of individualism” (Margulis; Sagan, 2002b, p. 25). For Margulis and Sagan (2002b, p. 25), “[...] this spirit tends to create in our perception a prejudice against the basic biological reality that we are open systems, whose very existence depends on the flow of energy and matter that permeates us”. We are within the “universe in heat” (Margulis; Sagan, 2002b, p. 25) and this intimacy is inseparable from creating networks of affiliation and nurturing a sociality vast enough to embrace unusual estrangement and engage in the work of challenging and remaking the terms of relationality.

Microbial lessons: not telling stories that represent or incorporate the other from the human to the human, but stories in which it is the inhuman that embodies the words and manifests itself through them and between them, a bodily communication through/in the world. That is why this storytelling outlines an ethics of entanglement, in Barad's (2020) style. Not an appeal to holism, but the resumption of an entangled relationship with difference, in which “[...] differentiation is a material act that is not about radical separation, but, on the contrary, [is]

about building connections and commitments” (Barad, 2020, p. 342). *Abominable loves between strangers* offer an image of ourselves in which we were never individuals. We are only a “[...] penetrable and opaque body, open and closed body [...]”. It has, after all, itself, its own phantasmagoric resources” (Foucault, 2013, p. 10). Foucault (2013) discusses this erotic encounter in an essay that is not about ecology, but that can be reread along with the concern that inspires us:

Maybe it should also be said that to make love is to feel one’s body close in on oneself. It is finally to exist outside of any utopia, with all of one’s density, between the hands of the other. Under the other’s fingers running over you, all the invisible parts of your body begin to exist. Against the lips of the other, yours become sensitive. In front of his half-closed eyes, your face acquires a certitude. There is a gaze, finally, to see your closed eyelids. Love also, like the mirror and like death - it appeases the utopia of your body, it hushes it, it calms it, it encloses it as if in a box, it shuts and seals it. This is why love is so closely related to the illusion of the mirror and the menace of death. And if, despite these two perilous figures that surround it, we love so much to make love, it is because, in love, the body is *here* (Foucault, 2013, p. 16, emphasis of the author).

In this figure of “love from the inside out”, in the expression of Stephan (2020), we can hear an echo of the torsion that microbial worlds perform within disturbed landscapes and, if they no longer return music to the sea in all its breadth, they continue, at each encounter, to attract us to the possibilities contained in the disturbance. We tell these stories of abominable loves that are already here, inside houses, inside ourselves, inhabiting our bodies when the war rages on. Nature is now the scene of the strangest of intimacies.

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Notes

- 1 Possible translation: Despicable animals come out of the sewers/Despicable animals come to decorate/My home/My dinner/My noble palate. The author uses the word “*escroto*” (scrotum) that, in Portuguese, has two meanings: the musculocutaneous sac in which the testicles and epididymis are contained, and an adjective to name someone who is morally vile, that’s why, in this text, we use “*scrotal [despicable] creatures*” [*criatura escrota*] to raise some points in the teaching of Biology.
- 2 This text is derived from the research project entitled *Thinking (theory of) curriculum with viruses: education, science and queer imagination* funded by the National Council for Scientific and Technological Development (CNPq) and by the Carlos Chagas Filho Foundation for Research Support in the State of Rio de Janeiro (FAPERJ).
- 3 Without intending to be exhausting, see Barad (2020), Alaimo (2009), Di-Chiro (2010) and Chen (2012).

- 4 It is beyond the scope of this text to problematize the incorporation of gender and sexuality categories into pedagogy language, something already done by one of us (Ranniery, 2017a) which, in short, demonstrates how responses to the feminist and LGBTQIA+ agenda reduce analytical categories and policies to certain types of subjects alterized as different.
- 5 That was the option of the translators Ernani Chaves and Romero Freitas for the German term *unheimliche*.
- 6 Inspired by the song *Enviadescer* by Linn da Quebrada, Ranniery (2017b), in Portuguese, “enviadescer” (faggotize) proposes a pun on the verbs *send* and *descend*, stating how queer affective bonds – friendship, kinship and sex – in the school trajectories of gay boys, distort the concept of curriculum, at the same time that bring it down to the level of these relationships.
- 7 It was Wittig (2022) who described heterosexuality as a system of thought that works, on many levels, based on “the need for the different/other at all levels” (Wittig, 2022, p. 63). From this consideration, one of us (Ranniery, 2021) suggested that linear temporal normativity underlying narratives in Biology teaching, including evolutionary theory and the insistence on obliterating the bridges between nature and culture, tend to treat gender and sexuality as a question restricted to the latter (human) field and, by effect, to those considered other than heterosexuality.
- 8 The data can be accessed at: <https://trends.google.com.br/trends/yis/2020/BR/>.

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