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**RESISTING THE COLONIZATION OF ‘LIFE’
TECHNOSCIENCE, FEMINIST CRITIQUE AND CONTEMPORARY ART**

Master Thesis
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One way or another, capitalism is colonialism. If the money can't find a new resource to feed on, it will reformulate an old one. Capitalism offers the earth a global system that feeds on itself and doesn't recycle its own waste. The infantilizing fantasy that preys on us is that of never having to acknowledge limits.

– Claire Pentecost, Notes from Underground (2012: 12)

'Life' cannot be made subservient to money and capital.

– Vandana Shiva, Bullshit (2005)

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INTRODUCTION

As a former student of biology my attention unconsciously seems to get drawn towards biotechnological issues. Probably, this is some sort of biochemical attraction. The fact that studying biology has induced the formation of novel connections between my neural synapses might have contributed to that. So it was no surprise that I knew I had found my location when I encountered the intersection of biology and feminist technoscience. A position, however, in which one sits uneasily – and so one should. I agree with those feminist writers who argue that the humanities and 'hard' sciences need to collaborate (Karen Barad, 2003; Donna Haraway, 1991; Nina Lykke, 1996). Feminist theory has to engage with the natural sciences in order to generate fresh and affirmative perspectives. Here I would like to add that contemporary art, too, has a significant role to play in the formation of such novel in-between spaces. Inquisitive artists have the means to work across disciplinary boundaries and to draw new connections between scholars, scientists, the public *and* the (nonhuman) environment.

I wish to stress that I am not for or against science. I might even call myself a lover of science. I do, however, want to engage critically with it, and this means that I wish to open up the conversation by including as many disciplines and players as possible. The natural sciences, especially after the emergence of new biotechnologies, necessitate a critical and interdisciplinary engagement. These new biotechnologies (e.g. molecular visualization techniques, genetic engineering and gene sequencing) have far-reaching implications for our perception of 'life'. They "have been regarded as unambiguously progressive, necessary and neutral means for realizing undisputed political objectives such as growth, progress and development" (Ingunn Moser, 1995: 3). The fact, however, that these biotechnological innovations are still regarded as *unambiguously* progressive worries me, because feminist scholars such as Sandra Harding (1991) and Donna Haraway (1991) have already (for over two decades ago) argued for the non-objectivity of technoscience. Haraway has also stated that "science is cultural practice and practical culture" embedded in the production of meaning (1997: 66) and as such it is intrinsically connected to power relations. New biotechnologies enable multiple novel ways of standardization, disciplining and

controlling 'life', i.e. new forms of biopolitics. These newly created power relations should be put under careful scrutiny by other critical disciplines such as gender studies and contemporary art.

Throughout her work, the feminist philosopher Rosi Braidotti repeatedly expresses the necessity of an interdisciplinary critical engagement with new biotechnologies by stating that “‘we’ are in *this* together” (original emphasis. 2006b: 36). What Braidotti wants to underscore here is both who ‘we’ is and what ‘this’ means. Being in this together and wanting to answer such questions requires, thus, not only a different framework of thought but also new alliances. No question can be solved in isolation any longer and that is why I will turn to the fields of technoscience, gender studies and contemporary art in this thesis. The formation of these novel coalitions will have to result in the emergence of new ontologies of becoming that foreground relationality. Centralizing the relationships will also need a new ethics of responsibility that can no longer be seen in separation of developing new biotechnologies such as genetic engineering.

For this thesis I will frame the ‘we’ and the ‘this’ that I want to engage with. The ‘this’ is the context in which these new biotechnologies are radically redefining our scientific as well as everyday experience of what ‘life’ has come to mean and what it should mean. The main issue with respect to new biotechnologies I wish to set apart in this thesis is the contemporary phenomenon of ‘biopiracy/biocolonialism’, which I see as a form of colonization that continues today. Due to the innovations that the new biotechnologies introduce, colonization, as a process of territorial and/or intellectual invasion followed by exploitative (socio-political and economic) control and as deeply embedded within asymmetrical historical power relations, has been able to take the next step. Technological innovations such as molecular visualization techniques and genetic engineering have not only modified our perception of what ‘life’ has come to mean but they simultaneously created new territories to colonize, i.e. they have enabled the colonization of *genetic* ‘life’. Moreover, the international legislation on Intellectual Property Rights justifies this form of ownership over genetic ‘life’ (Vandana Shiva, 1997; 2001). In Chapter I, I will explore the genealogy that has led to ‘this’ contemporary form of colonization.

The pressing ramifications of biopiracy/biocolonialism are noticeable all over the world, especially within the agricultural sector. The transnational corporations

within the ‘agro-chemical industry’¹ are actively appropriating and commercializing biodiversity – 90% of which is found in the Third World (Ines Doujak, 2007) – via bioprospecting. This form of prospecting draws on the existing and (actively) cultivated indigenous knowledge of local biodiversity without apt compensation (Shiva, 1997), i.e. the pirating of knowledge. Transnational corporations need indigenous knowledge to know about the specific applications and characteristics of the biological resources they will subsequently patent and capitalize. In particular, the patenting of native genetically modified (GM) seeds² and their subsequent global distribution has led to the rise of monocultures.

Monocultures not only replace traditional farming practices they are also unsustainable and destructive towards biodiversity, cultural diversity, and livelihoods (ibid.). They cause social *and* ecological damage. From India to South-America, big transnational corporations are robbing small-scale traditional farmers of their livelihoods, and simultaneously they are reducing biodiversity. In India, small-scale farmers are driven into debt by the introduction of monocultures based on privatized patented GM-seeds (such as Monsanto’s infamous Bt Cotton³). This has led to an alarming increase in farmers’ suicides⁴ (Richard Swift, 2007; Amol Dongre and Pradeep R. Deshmukh, 2012; P.B. Behere and A.P. Behere, 2008). In South-America, too, biopiracy/biocolonialism is posing a threat to both biodiversity as well as local economies. Peruvian local farmers, for instance, are worried that the introduction of a single patented GM-potato variety by multinational Syngenta will jeopardize the existence of thousands of indigenous varieties on which these farmers have relied for centuries (Doujak, 2007). Aided by new biotechnologies and international law, transnational corporations are robbing ‘humans’ and ‘nonhumans’, even entire ecosystems, of sovereignty.

¹ “The industry that used to be the chemical industry is also the pharmaceutical industry, is also the seed industry, is also the biotech industry. There is no separation -- and agro-chemical industry. It is all one” (Shiva in Nic Paget-Clarke, 2003).

² “Genetically modified seed, the consummate commodity form, is a carrier of the entire corporatized system of industrial agriculture. The complete package comprises the patented seed, the synthetic fertilizer, and the patented herbicide that the seed has been designed to tolerate, all marketed by the same company. The knowledge condensed in seeds is abducted from common hands and obscured in the laboratories and law offices of the corporation” (Claire Pentecost, 2012).

³ One of the main reasons that Monsanto’s Bt Cotton has a bad reputation is the fact that this GM-variety produces a lower yield while having higher production costs than the traditional varieties (Shiva, 1997; Doujak, 2007) The GM-variety undermines the self-organizing qualities of the indigenous varieties.

⁴ However, the reasons for farmers’ suicides in India are by no means unilateral; they are “due to the complex interplay of social, political and environmental constraints” (Amol Dongre and Pradeep R. Deshmukh, 2012: 5).

To counteract the matter of biopiracy/biocolonialism I will propose ‘other’ modes of thinking. In the second chapter, I will, thus, move towards a posthuman(ist) understanding of the ‘we’ that are being inflicted by these new biotechnologies. The ‘we’ are both the ‘human’ as well as the ‘nonhuman’ players. Here I want to emphasize that the ‘nonhuman’ agents stretch across species boundaries, even beyond the organic/inorganic binary. The ‘we’ are, amongst others, the farmers, the seeds and the soil. The feminist biologist Donna Haraway urgently stresses the need of rethinking the importance of the relation in a multispecies existence (2003; cf. Karen Barad, 2003). To understand the vitality of the relation I will reconceptualize the concepts of matter, species and ‘life’ with the help of several distinguished feminist scholars in the fields of technoscience and posthumanism. Opening up these concepts is necessary, because a less anthropocentric and more inclusive⁵ understanding of the ‘we’ is a first step towards opposing biopiracy/biocolonialism.

After these two chapters in which I have set apart the genealogy of biopiracy/biocolonialism and explored into ‘other’ modes of engagement with the world, respectively, I will turn to the field of contemporary art in the last chapter to illustrate the efforts that are already being made in order *grasp* a posthuman(ist) and relational understanding of the ‘we’ and the ‘this’. Not until recently, I have come to consider contemporary art as an alternative system of knowledge production that could play a key role in the move towards new ontologies of becoming. I will therefore analyze four different artworks each by a distinct artist that are deeply grounded in the context of biopiracy/biocolonialism and forefront questions regarding multispecies, relationality and materiality. These four artworks enable new contact zones between ‘human’ and ‘nonhuman’ players, and thus they invite us to (re)think our role as (Western) human participants as part of the environment. We need to understand the importance of the relation and interconnectedness if we want to refrain biopiracy/biocolonialism from corporately owning the genetic territories of ‘life’.

⁵ Keeping Donna Haraway’s notion of situated knowledges (1991) in mind we can never be all-inclusive, but we need to remain actively aware of our partiality, i.e. always being in search to be more inclusive and acknowledging at times what is being left outside.

CHAPTER I

SCIENCE AND COLONIALISM

Through reductionist science, capital goes where it has never been before. The fragmentation of reductionism opens up areas for exploitation and invasion.

– Vandana Shiva (1997: 45)

My call towards new ontologies of becoming comes forth from several contemporary issues that have to do with new biotechnologies. The main issues I want to address here are biopiracy (Vandana Shiva, 1997; 2001) and biocolonialism (Laurelyn Whitt, 2009). In this chapter I want to explore the entangled genealogies of two historical events that have led to the rise of biopiracy/biocolonialism⁶ today. First, I will discuss what constitutes the phenomenon of biopiracy/biocolonialism. In order to understand its emergence I will subsequently elaborate how the so-called Western scientific revolution has led to a static mechanistic worldview. After which I will turn towards the history of colonization in search for the rationales that are still applicable to this contemporary form of colonization. Lastly, I will argue how the improvement of molecular visualization techniques within the field of new biotechnologies has actualized the most recent step in the history of colonization, namely the biocolonization of genetic ‘life’ via the creation of novel territories for invasion.

Biopiracy/Biocolonialism

Over the last two decades alarming attention has been raised for the phenomenon of biopiracy (Shiva, 1997), or – as it has been termed more recently – biocolonialism (Whitt, 2009). In *Biopiracy: the Plunder of Nature and Knowledge* (1997) the Indian physicist, activist and ecofeminist Vandana Shiva has written extensively on the issue of biopiracy, which she has come to see as the next step in an ongoing technological revolution that continues to exploit nature and indigenous people, in particular, their

⁶ Throughout my thesis I wish to use this merged variation of the interchangeable terms biopiracy and biocolonialism. The term biopiracy comes from Vandana Shiva (1997) and explicitly implies the robbery of biologically based common resources and its related indigenous knowledge of biodiversity, whereas biocolonialism, which I take from Laurelyn Whitt (2009), has a better emphasis in regard to the ongoing history of colonization, violation of indigenous sovereignty and the imposition of domination over others (in this case over both ‘humans’ and ‘nonhumans’). Because I find both connotative aspects to be true and important I have chosen to jointly use biopiracy/biocolonialism.

systems of knowledge production in relation to biodiversity. Laurelyn Whitt, a philosopher of science, has also taken up this matter of continued exploitation of indigenous knowledge systems in her book *Science, Colonialism, and Indigenous Peoples: the Cultural Politics of Law and Knowledge* (2009).

“Biodiversity has always been a local common resource” (Shiva, 1997: 67) that is actively constituted by the reciprocal relationship between ‘natural’ material(s/ities) and indigenous systems of knowledge production. Biodiversity is a *local* life-support system for and by multispecies (‘human’ and ‘nonhuman’) that depends on relationality, responsibility, regeneration, nourishment, creativity and co-production (Shiva, 1997). The new biotechnologies, however, have decontextualized the meaning and value of biodiversity. In the context of biopiracy/biocolonialism, biodiversity has been transformed from a *local* life-support system into a deterritorialized *global* raw resource for transnational corporations to commercialize (Shiva, 1997: 66).

Nowadays, biodiversity provides the ‘raw’ resource for exploitation via biopiracy/biocolonialism, which is the unjust appropriation, commodification, and commercialization of the common⁷ biological resources and its co-emerged indigenous systems of knowledge systems by (mostly Western) transnational corporations undermining ‘human’ and ‘nonhuman’ sovereignty (Shiva, 1997; 2001; Whitt, 2009). These common biological resources are actual life forms (i.e. species) that are being patented. Biopiracy/biocolonialism is backed up by the international legislation on Intellectual Property Rights that grant the ownership over a life form as the natural right after the ‘discovery’ or ‘invention’ of its application. The ‘discovery’ or ‘invention’ of the organism’s use, however, is (often) based on already existing indigenous knowledge, i.e. biopiracy. Additionally, the act of biopiracy/biocolonialism is considered to be a necessity to benefit and further develop so-called Third World countries. The opposite, however, is happening (Shiva, 1997). On that note, Whitt opens her book with the important statement that:

“[b]iocolonialism is in many respects more of the same – a continuation of the oppressive power relations that have historically informed the interactions of western

⁷ A critical footnote is in place. “To speak of the commons as if it were a natural resource is misleading at best and dangerous at worst – the commons is an activity and, if anything, it expresses relationships in society that are inseparable from relations to nature” (Peter Linebaugh quoted in Jean Fisher, forthcoming).

and indigenous cultures, and part of a continuum of contemporary practices that constitute forms of cultural imperialism” (2009: 1).

Biopiracy/biocolonialism is not an entirely new phenomenon but, in many ways, it rather draws on the long and ongoing history of colonization by the West that goes back over more than 1,500 years. However, the most important difference that distinguishes this form of contemporary colonization from its origins is the different material space it is set out to conquest. Formerly, colonization aimed at the acquisition of external spaces such as land and minerals. Nowadays, biopiracy/biocolonialism targets to possess the internal territories of the body, both ‘human’ and ‘nonhuman’. I will elaborate on what constitutes these ‘new’ interior spaces towards the end of this chapter.

So before elaborating on this particular (bio)colonization of the body’s interior territories I wish to expand on the historical genealogy of two inextricable phenomena that led to this contemporary issue. Firstly, I will elaborate how the previously dominant organic framework that foregrounded *change* has actively been transformed into a *static* mechanical worldview within Western society. This transformation known as the scientific revolution lies at the heart of what Shiva called the ongoing technological revolution (1997). Afterwards, I will trace back the initial rationales that justified colonization and show how they in combination with the legacy of the scientific revolution constitute the present concern of biopiracy/biocolonialism.

The Rise of the Scientific Machine

The philosopher of science Carolyn Merchant writes that “[b]etween 1500 and 1700 an incredible transformation took place” (1980: 288). Before 1500 the cosmos was believed to be a living and regenerating organism, but after 1700 nature was seen as an inert machine (ibid.). This period has been dubbed as the scientific revolution, and accordingly has had a substantial influence on our present Western perception of the world. Merchant eloquently describes how the philosophers of that time, such as Francis Bacon, René Descartes, and Isaac Newton, managed to replace the previously dominant organismic cosmology with a new ruling mechanistic worldview and how “by reconceptualizing reality as a machine rather than a living organism, sanctioned the domination of both nature and women” (Merchant, 1980: xvii) also justifying their (joint) exploitation (1980).

Before the sixteenth century the dominant worldview was one of a *changing* nature, a *terra mater* – a living earth mother who is active, nurturing and regenerative (Shiva, 1997: 46-47). To adhere to such a specific notion of nature carried along particular consequences.

“The image of the earth as a living organism and nurturing mother served as a cultural constraint restricting the actions of human beings. One does not readily slay a mother, dig into her entrails for gold, or mutilate her body [...] As long as the earth was considered to be alive and sensitive, it could be considered a breach of human ethical behavior to carry out destructive acts against it” (Merchant, 1980: 3).

For men thus to gain complete control over nature these animistic assumptions and the connotations with the nurturing mother had to be transformed into a worldview that saw nature as dead, passive and inert. Experimental science was the required tool for such a transformation (Merchant, 1980). The English philosopher and scientist Francis Bacon (1561-1626) had been among the first to advocate “the domination of nature [...] for the good of the entire human race” (1980: 169). He strongly argued in favor of enslaving nature by means of mechanical technologies that entailed the experimental dissection and manipulation of nature.⁸ “[H]uman knowledge and human power [should] meet as one” (Bacon quoted in Merchant, 1980: 171). This Baconian agenda promoting ‘knowledge as power’ would be fortified in the two centuries to come. By the time of the seventeenth century, the machine had fully found its way into everyday life and therefore it easily came to stand as the prevalent metaphor for understanding the cosmos (1980). Such a metaphor meant that nature was rendered passive, inert, awaiting external (male) input, and that it was composed of dead matter in resemblance to actual machines.

Furthermore, the underlying principle of machines is that they can and have to be controlled and dominated. Due to the machine’s passive nature and fragmentary context-independent structure external (male) input also became the foregrounding principle in order to pursue linear progress and capitalist profit. Merchant has summed up the five elementary assumptions of machines and their subsequent implications for the perception of nature:

⁸ Francis Bacon made use of female imagery within the contexts such as “bound into service”, “slave”, “in constraint” and “molded” in order to motivate his argument of control over nature (Bacon quoted in Merchant, 1980: 169).

“[t]he mechanical structure of reality (1) is made up of atomic parts, (2) consists of discrete information bits extracted from the world, (3) is assumed to operate according to laws and rules, (4) is based on context-free abstraction from the changing complex world of appearance, and (5) is defined so as to give us maximum capability for manipulation and control over nature (1980: 234).

These five assumptions have shaped our Western experience of daily life and they laid down the fundamentals for contemporary Western science, which is regarded to have access to “objective, value-free, and context-free knowledge of the external world” (1980: 290). In this mechanistic model we can also trace the roots of reductionism still being the most prevalent paradigm within ‘modern’ science. A reductionist account upholds the belief “that a complex system is nothing but the sum of its parts” (Polkinghorne, 2005) and the whole can be understood by studying its orderly parts (context-independent).⁹ Reductionism also assumes that based on orderly and structured laws the reorganization of separate parts can generate a novel and functional whole.¹⁰ In short, reductionism tries to reduce the cosmos’ complexity to a comprehensive and structured order. In accordance with this ideology, the mechanistic paradigm has, by the doings of the physicist sir Isaac Newton (1642-1727), exchanged the primacy of “organic flux, change, becoming, and process” with “geometrical idealization, stability, structure, being, and identity” (1980: 277).

Merchant reasons that “[t]he removal of animistic, organic assumptions about the cosmos constituted the death of nature – the most far-reaching effect of the scientific revolution” (1980: 193). Because of a mechanistic and reductionist approach towards matter in combination with the desire and justification to dominate and manipulate nature for human benefit the scientific revolution provided the foundations on which the phenomenon of biopiracy/biocolonialism rests. Seeing nature as a *static* machine awaiting external (male) input to be controlled rather than an *always becoming*, and *self-organizing* organism removed any ethical constraint in regard to the exploitation and manipulation that could harm nature. In that sense, reductionist mechanism provided the required legitimization to tamper with an

⁹ As opposed to a holistic account, which believes that the whole is always more than its parts.

¹⁰ Such reductionist conviction forms the point of departure for many endeavors within the field of synthetic biology. Cf. the work of molecular biologist Craig Venter who is trying to create synthetic life *de novo*.

orderly nature according to an anthropocentric and growing capitalist demand that centers development and progress (1980).

Of course, one cannot discuss the legacy of the scientific revolution without mentioning the French philosopher René Descartes (1569-1650) whose ‘I think therefore I am’ has been most influential in the conceptualization of autonomous individual anthropocentric beings. In a forthcoming paper that will accompany the contemporary art exhibition *Yes Naturally: how art saves the world* (2013)^{11,12}, art critic and zoologist Jean Fisher sets apart the impact of Cartesianism. She explains that the human came to be at the center stage of the grand scheme of things – with an emphasis that some humans matter more than others (cf. Fisher, 2013, forthcoming). The Cartesian split finalized an ultimate cut between ‘internal’ and ‘external’, between the knowing subject and the known object (cf. Karen Barad, 2003: 806). Fisher also conveys that this body/mind split led to a new anthropocentric system of valuation. The world became perceived as disjointed fragments to be measured and valued (cf. Fisher, 2013, forthcoming), i.e. reductionism. Western science and society lost its reciprocal connection with the environment (ibid.). Concurrently, the Cartesian mind/body split reinforced other hierarchical and patriarchal dualisms: Man/Woman; culture/nature; human/nonhuman; active/passive.

However, the ongoing mechanistic paradigm, which justifies the tampering with nature for the benefit of humans, progress and capitalism, and the Cartesian split, which led to a highly anthropocentric dualistic framework, alone are not sufficient enough to explain the complex and asymmetrical power relations that constitute biopiracy/biocolonialism. Therefore, I turn to the second significant historical genealogy of colonization that today continues.

The Rise of Private ‘Commons’

According to ecofeminist Vandana Shiva the origins of (bio)colonialism can be traced back over 1,500 years to the sixth century of Christian Europe in which era the first

¹¹ *Yes Naturally: how art saves the world* (2013) will be a six-month contemporary art manifestation taking place in The Hague, The Netherlands. *Yes Naturally* is aimed at challenging the concept of ‘nature’ with its many interchangeable meanings. The main critical questions are: what is ‘natural’? And who or *what* gets to decide this? Do only humans decide? Or should bacteria, animals, hurricanes, entire ecospheres etc. also have say in this? In an attempt to move away from anthropocentrism, *Yes Naturally* wants to incorporate the nonhuman agents (back) into the conversation.

¹² In addition to the exhibition a publication around the critical questions will be released (March 2013) including contributions by authors such as Jean Fisher, Vandana Shiva, Timothy Mortin, Luciana Parisi and Tim Ingold. These contributions will also engage with the critical questions: what is ‘natural’? And who or *what* gets to decide this?

litterae patentes were granted. *Litterae patentes* were so-called ‘open letters’¹³ issued by Christian monarchs and the Church. The ‘open letters’ served as official documents by which certain privileges and honors were granted. These awards mainly considered the ensuing titles and rights upon the discovery of and conquest over foreign lands not yet inhabited by Christians (2001: 12). The best known and perhaps the most influential example of such *litterae patentes* in the history of colonization is that of Christopher Columbus.

“On April 17, 1492, Queen Isabel and King Ferdinand granted Christopher Columbus the privileges of ‘discovery and conquest.’ One year later, on May 4, 1493, Pope Alexander VI, through his ‘Bull of Donation,’ granted all islands and mainlands ‘discovered and to be discovered, one hundred leagues to the West and South of the Azores towards India,’ and not already occupied by any christian [sic] king or prince as of Christmas of 1492, to the Catholic monarchs Isabel of Castille and Ferdinand of Aragon” (1997: 1).

The involvement of the Christian Church at the highest level, namely the Pope, laid down the foundations for moral and divine justification as to colonize the world outside of Europe. For land occupation to occur, the land had to be declared “*terra nullius*, devoid of people” (Whitt, 2009: 12). Where and whenever indigenous people (i.e. non-white, non-Christians) did occur it was argued that they were not truly human, but rather belonged to the fauna so as to morally justify the act of acquisition (Shiva, 1997: 46; 2001: 13).

Additionally, Whitt puts forward a second justification for acquisition that appeared in the wake of the scientific revolution. This rationale “[declared] the intellectual and cultural properties of indigenous peoples to be in the public domain (i.e., to belong to everyone)” (2009: 12). Following this line of reasoning – in which to belong to everyone equals to belong to no one (2009: 170) – not only the conversion of land and minerals into private property was authorized, even more importantly, it was made possible that peoples, cultures and knowledge systems, too, could be owned privately. So over time the justification for both territorial (*terra*

¹³ The openness of the letters referred to the fact that these documents were announced publicly so that everyone was aware of the newly acquired titles and rights (Shiva, 2001: 12). Modern day patents also rely that their protected information is made publicly accessible, however, “the use of that information remains the private right of the patent holder or licensee” (Whitt, 2009: 170).

nullius) as well as cultural (the public domain) acquisition entered the discourse on colonization. In regard to the rationale of the public domain Whitt continues to write that:

“[t]he latter conversion process may be regarded as a legal theory of cultural acquisition, whereby western intellectual property rights are invoked in the interests of cultural imperialism in order to appropriate valued intangible indigenous resources. The politics of property is the central historical dynamic mediating western and indigenous relations” (2009: 13).

Whitt argues that after the rationale of *terra nullius*, which justified the acquisition over land and indigenous people, the implementation of the public domain facilitated the privatized appropriation by the West of the intellectual commons that were based on indigenous ways of knowing. Nowadays, these politics of property take the shape of patents and are at the heart of biopiracy/biocolonialism (Shiva 1997; 2001).

We should read this cultural acquisition together with the legacy of the scientific revolution, which laid down the fundamentals for knowledge validation through experimental methodologies. Seen as having no intrinsic value, nature from then on required human ‘improvement’ (i.e. labor) in order to produce value¹⁴ (Whitt, 2009: 26). This pertains to the external input that a mechanistic nature would require at all times. Therefore, the ‘valueless’ commons within the public domain, belonging to no one¹⁵, could (and still can) be turned into private property after having been ‘improved’ by human (Western scientifically validated) labor. Whitt provides us with an example that perfectly explains the Western reductionist logic that underlies biopiracy/biocolonialism.

“This process [of private appropriation] is seen as justifiable and as justified because indigenous peoples are regarded as *sine scientia*, without science, and, therefore, without genuine knowledge of the natural world. Guajajara healers, the rationale goes, may have used *Pilocarpus jaborandi* to treat glaucoma for centuries, but they have not isolated the active ingredient responsible for its beneficial effects in the laboratory. So

¹⁴ The British philosopher John Locke (1632-1704) has been key to the thought that property and value come forth from labor (Whitt, 2009: 26).

¹⁵ “The notions of property that belongs to no one and of property that belongs to everyone are functionally similar [...] enabling a conversion process which leads to the privatization of property” (Whitt, 2009: 170).

it is perfectly legitimate to go ahead and apply for a patent” (Whitt, 2009: 27).

The fact that the Guajajara understood the therapeutic effects of the endemic *jaborandi* and were able to apply this without the need to *reduce* it to just one active component provides no ‘true’ scientific validation from a reductionist perspective. According to this dominant paradigm, value is only ascribed to nature after it has been mixed human Western scientific labor. In the case of the *jaborandi* this meant the determination and extraction of the active component in the laboratory.

For these claims of private property to be protected an institutionalized legislative system had to be installed. Whereas the first *litterae patentes* were concerned with the acquisition of land (*terra nullius*), a second type of patents was concerned with the intellectual property of knowledge having the stimulation and transfer of technology as their main purpose (Shiva, 2001). Patents were granted not to avoid others from using the technology but rather to reward the inventor to teach others. Shiva traces the institutionalized origins of this second imperative for patents back to the state of Venice during the Renaissance. In March 1474, Venetian Law specified the following:

“[w]e have among us men of great genius, apt to invent and discover ingenious devices... Now, if provisions were made for the works and devices discovered by such persons, so that others who may see them could not build them and take the inventors’ honour away, more men would then apply their genius, would discover, and would build devices for common wealth” (Venetian Law quoted in Shiva, 2001: 14).

In this passage we can discern the foundations of contemporary patent law.¹⁶ The initial goal was to stimulate technological innovation by granting the inventor protection and reward by way of providing a temporary monopoly over its invention during which time he could teach the new technology to others. The main purpose was to further stimulate creativity in order to induce *common* wealth.

Nowadays, in the context of biopiracy/biocolonialism we see that patents still provide the inventor with a twenty-year monopoly over the market. However, the

¹⁶ See Shiva (1997 and 2001) who gives a full account of contemporary international legislation around Intellectual Property Rights and biopiracy. Key players according to here analysis are: the WTO, the Intellectual Property Committee (IPC), U.S. based; the Union of Industrial and Employers’ Confederations of Europe (UNICE); and Keidanren from Japan.

inventors of these new technologies are not teaching others how to use their technology. They rather enclose the production process via the application for a patent upon which they commercialize the product. The common wealth has become their individual, corporate and by extension Western wealth. As Shiva (1997; 2001) and Whitt (2009) both argue, this stimulation of Western corporate wealth has been based on and resulted in the exploitation of the Third World's rich biodiversity and its closely related indigenous systems of knowledge. Both biodiversity and indigenous knowledge systems have been rendered as being in the public domain, i.e. belonging to no one. Based on this distorted logic contemporary patenting has, instead of stimulating technology transfer, led to an enclosure of the commons via its privatization (Shiva, 1997: 68-9).

Colonizing 'Life Itself'

Up to this point I have shown how since the scientific revolution nature has been considered to be inert, passive, dead and awaiting external (Western scientific) human input. Besides, I have also explored the rationales behind colonization, as a process of territorial and/or intellectual followed by exploitative (socio-political and economic) control, which are: *terra nullius* and belonging to the public domain. Here I want to argue that the transformation from colonization into biocolonization was enabled by the newly created interior territories that have been dubbed: 'life itself'. Contemporary biopiracy/biocolonialism is the result of the marriage between 'modern' science and colonization, which roughly translates into the Baconian agenda that advocates 'knowledge as power'. Contemporary biopiracy/biocolonialism, I want to argue here is based on the idea that nature is a machine that can be stripped down by science to its bare essentials in order to be manipulated, controlled, and indeed colonized to serve an anthropocentric and capitalist driven demand. 'Life itself' has become the latest object of exploitation.

'Life itself' is quite a recent concept, which emerged along the advent of the new biotechnologies during the previous century. Especially those new biotechnologies concerned with the innovation of molecular visualization techniques have contributed to the conceptualization of 'life itself'. In their joint essay *The Mind's Eye* (1983) feminist scholars Evelyn Fox Keller and Christine R. Grontkowski have argued how visual perception has become metonymic for male logic therefore emphasizing the primacy of visualization within Western science. Moreover, the

theorist of visual culture Anneke Smelik states that in contemporary Western culture the use of space and image have conflated.

“[...] the conquest of space goes hand in hand with the conquest of the image. [...] The conquest of that ‘final frontier’ [the interior body] is purely visual, in the sense that it is a quest for visualizing spaces – inner, outer, real virtual. Space is there to be rendered as a an image [...]” (2008: 144-5).

In other words, in order to colonize ‘life’ (i.e. to invade, control and exploit) it had to be visualized. Fueled by the desire of a penetrative understanding and by a mechanistic reductionist agenda, the new biotechnologies first visually infiltrated into the intimate realm of the genome. Innovative visualization techniques facilitated the revealing of the genome’s structure and code upon which the biotechnological discourse came to define ‘life itself’ as a simplified and reprogrammable informational model (Sarah Franklin, 2000: 192) represented by only four letters: A, T, C, and G.¹⁷ The representation of ‘life’ as a four letter code is a reductionist model *par excellence*, ready to be rewritten.

“Life, that is to say, was molecularized [...] This molecularization was not merely a matter of the framing of explanations at the molecular level. Nor was it simply a use of artefacts [sic] fabricated at the molecular level. I was a reorganization of the gaze of the life sciences, their institutions, procedures, instruments, spaces of operation and forms of capitalization” (Nikolas Rose, 2001: 13).

The fact that ‘life’ is molecularized means that from now on DNA (i.e. macromolecules) alone is considered to be the building block, or the source, of ‘life’. DNA in its turn is fragmented into genes that are made up by a four-letter code. This understanding, fitting to a reductionist take on nature, completely decontextualizes ‘life’, because it fixes ‘life itself’ on a representational plane as a static structure. The genetic code is seen as the ideal bare form of ‘life’, and it is no longer related to other organisms, the environment or the whole of biodiversity. ‘Life’ as such has become

¹⁷ DNA is made up of nitrogenous base pairs. There are four types of bases each of them assigned an abbreviation A (adenine), T (thymine), C (cytosine), and G (guanine). Ordered within the double stranded DNA helix, they form the base pairs A-T and C-G that together make up the entire genetic code of what has been dubbed ‘life itself’.

accessible as objective and context-independent knowledge. Just like nature during the scientific revolution, the concept of 'life' has lost its connotations with "organic flux, change, becoming, and process" for which in return it got back "geometrical idealization, stability, structure, being, and identity" (Merchant, 1980: 277). The genetic code is also considered to be like a machine awaiting external human input. 'Life itself' has been rendered inert and passive. In addition to visualization, the new biotechnology of genetic engineering made it also possible to alter 'life itself' at will via externally inserted modifications in the name of human progress. 'Life itself' is no longer considered to be a living organismic whole but it is merely approached as a fragmentary commodity.

Moreover, as the above quote by the sociologist Nikolas Rose mentions, the molecularized notion of 'life' has created novel spaces that have been a requirement for the private and capitalist appropriation of new genetic territories. "The colonies have now been extended to the interior spaces, the 'genetic codes' of life-forms from microbes and plants to animals, including humans" (Shiva, 1997: 3). The feminist scholar Rosi Braidotti adds:

"[t]he notion of 'life itself' lies at the heart of biogenetic capitalism as a site of financial investments and potential profit. Technological interventions neither suspend nor automatically improve the social relations of exclusion and inclusion that historically had been predicated along the axes of class and socioeconomics, as well as along the sexualized and racialized lines of demarcation of 'otherness'. Also denounced as 'biopiracy', the ongoing technological revolution often intensifies patterns of traditional discrimination and exploitation. We have all become the subject of biopower, but we differ considerably in the degrees and modes of actualization of that very power" (2010: 204-5).

Innovative technologies do not automatically improve the 'this' in which 'we' are together. Without a critical engagement they even reinforce or worsen the existing asymmetries. On Braidotti's note that the degree in which (bio)power subjects us differently Shiva (1997; 2001) and Whitt (2009) both state that the new biotechnologies, which have actualized biopiracy/biocolonialism, negatively affect the so-called Third World. The new biotechnologies have created novel ways for the West in which to further colonize and exploit the developing countries via the private

appropriation of their biodiversity and its co-emerged indigenous systems of knowledge.

In this form of colonization that continues today, ‘life itself’ and biodiversity are treated just like *terra nullius* and being in the public domain. In need of a contemporary equivalent Shiva has coined the term “‘Bio-Nullius’– treating biodiversity knowledge as empty of prior creativity and prior rights, and hence available for ‘ownership’ through the claim of ‘invention’” (2001: 49). In the process of biopiracy/biocolonialism, the interior spaces of ‘life itself’ are regarded as uninhabited and the indigenous knowledge of biodiversity is believed to belong to everyone. Therefore, these spaces can be invaded and claimed as private property. Both ‘human’ and ‘nonhuman’ agents, however, have actively cultivated biodiversity and its related knowledge over millennia (Shiva, 1997). Shiva has argued that “[r]esistance to biopiracy is a resistance to the ultimate colonization of life itself – of the future of evolution as well as the future of non-Western traditions of relating to and knowing nature” (1997: 5).

As I have set apart, biopiracy/biocolonialism is not just a contemporary phenomenon but that it draws on a long genealogy in which colonization and science have both played major roles. I have also argued that biopiracy/biocolonialism is grounded in a reductionist and mechanistic worldview. So in order to resist biopiracy/biocolonialism and ‘the ultimate colonization of life itself’ we need to challenge this fragmentary and static worldview. In the next two chapters I want to propose forms of resistance based on alternative modes of thinking and understanding the world. These other frameworks are based on relationality, reciprocity, change, responsibility, and interconnectedness, i.e. I want to make a move towards ontologies of becoming. Although these ontologies of becoming are not a return to the same ancient organismic worldviews that were prevalent before the scientific revolution they also foreground the organismic.

CHAPTER II

TOWARDS A POSTHUMAN(IST) BIODIVERSITY

The threads are alive; they transform into each other; they move away from our categorical gaze. The relations among the technical, mythic, economic, political, formal, textual, historical, and organic are not causal. But the articulations are consequential; they matter. Implosion of dimension implies loss of clear and distinct identities, but not loss of energy of mass and energy.

– Donna Haraway (1997: 68-69)

In the previous chapter I have explored the historical genealogy that constitutes the mechanistic and reductionist approach of biopiracy/biocolonialism. I have argued that biopiracy/biocolonialism is a form of colonization that continues today. Due to innovative new biotechnologies, colonization, as a process of territorial and/or intellectual invasion followed by exploitative (socio-political and economic) control, has been able to invade and privatize the newly created genetic territories of ‘life itself’. As a form of asymmetrical (bio)power (Rosi Braidotti, 2010: 204-5), biopiracy/biocolonialism negatively affects and capitalizes the biodiversity of the so-called Third World (Vandana Shiva, 1997; Laurelyn Whitt, 2009). Biopiracy/biocolonialism exploits both ‘human’ and ‘nonhuman’ agents such as farmers, seeds and soils. The existence of local and accessible life-sustaining biodiversities is being threatened by the exploitative practices of biopiracy/biocolonialism and calls, as ecofeminist Vandana Shiva also urges (1997: 5), for resistance. In this chapter I will, therefore, propose ‘other’ modes of thinking and understanding the world as potential strategies of resistance against the dominant mechanistic and reductionist paradigm that underlies biopiracy/biocolonialism.

Because biodiversity forms the ‘raw’ and passive resource for exploitation, these ‘other’ modes necessitate the rethinking of some of the mechanistic concepts that are constituent to biodiversities – *local* life-support systems for and by multispecies (both ‘human’ and ‘nonhuman’) that depend on the reciprocal and entangled relationships between diverse ‘natural’ material(s/ities) and indigenous systems of knowledge. In the context of biopiracy/biocolonialism, biodiversities, as

vital life-sustaining systems, are regarded as the ‘raw’ resource that feeds the colonization of ‘life itself’. The particles of ‘life itself’ are considered to be privatized commodities. In order to oppose this process of commodification I will reconceptualize the notion of ‘life’ by drawing on the work of the feminist philosopher Rosi Braidotti.

However, before exploring a posthuman(ist) understanding of ‘life’, I wish to engage with two other concepts that are constituent to biodiversities, namely: matter and species. Firstly, I will look into the concept of matter. As the very substance of nature, matter has also been rendered inert and passive during the scientific revolution. The Baconian agenda of that time promoted control over nature (i.e. matter) for human benefit (Carolyn Merchant, 1980: 169). Still dominant today, this anthropocentric worldview legitimizes biopiracy/biocolonialism (see Chapter 1). In order to challenge this anthropocentric perspective I turn to the work of the feminist physicist Karen Barad who argues that ‘matter matters’, because matter is an active doing (2003).

Secondly, I will readdress the concept of species because biodiversities depend on a reciprocal multispecies existence. The discourse on species also has a long genealogy since the taxonomist Carl Linnaeus institutionalized it in the wake of the scientific revolution. Linnaeus made the first attempt to structure all life forms known to man into one hierarchal model. Charles Darwin has made another significant contribution to the hierarchy within species. Darwin based his theory of evolution and the emergence of all species on a ‘survival of the fittest’. In my aim to deconstruct the hierarchal notion of species I will draw on the work of the feminist and biologist Donna Haraway. In her *Companion Species Manifesto* (2003) she argues in favor of the importance of a multispecies existence and becoming. I will read her argument together with Lynn Margulis’ theory of endosymbiosis in order to come to a less anthropocentric and more accountable understanding of species. To acknowledge heterogeneous multispecies existence would contravene the exploitation of ‘other’ species (and biodiversities).

To read together a posthuman(ist) reconceptualization of matter, species and ‘life’ as constituent to biodiversities would enable a less anthropocentric and more inclusive understanding of the world in which ‘we’ (multispecies) are together. Moreover, it would provide a constructive point of departure for resistance against “the ultimate colonization of life itself” (Shiva, 1997: 5).

Posthuman Performativity and Intra-Action

As I have argued in Chapter I, biopiracy/biocolonialism relies on a mechanistic account of matter. Matter is perceived as inert, passive and waiting external human input, which legitimizes, even necessitates, human interference in nature. A posthuman(ist) deconstruction of matter as inherently active would add to a constructive resistance against biopiracy/biocolonialism. For this I shall focus on the work of the theoretical physicist and feminist Karen Barad. With her argument in favor of “onto-epistem-ologies – the study of practices of knowing in beginning’ (2003: 829) she aims to undermine both reductionism (based on decontextualized singular particles) and anthropocentrism.

In *Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter* (2003) Barad starts challenging our Western ways of knowing based on representationalism. She critiques representationalism because it “separates the world into the ontologically disjoint domains of words and things, leaving itself with the dilemma of their linkage such that knowledge is possible” (2003: 811), i.e. representationalism assumes that there are “to be two distinct and independent kinds of entities” (2003: 804), which are a pre-existing active subject knower and an passive object of knowledge; the latter represented in “words” and “things”.¹⁸ She continues that within science studies representationalism is often taken for granted and even argued in favor of because of its mediating role to access knowledge about the material world (2003: 806). Barad, in want of closing this gap between knower and known, is arguing towards an understanding of ‘posthuman performativity’ instead of representationalism. Representationalism focuses too much on the formation of the subject (the human), whereas performativity looks “also to the [discursive] production of the matter of bodies” (2003: 808). “A posthuman notion of performativity [...] calls into question the givenness of the differential categories of ‘human’ and ‘nonhuman,’ examining the practices through which these differential boundaries are stabilized and destabilized” (2003: 808).

‘Matter matters’ is Barad’s starting point to which she comes full circle in the conclusion of *Posthuman Performativity*. Her work is aimed at challenging the belief in pre-existing things. Her posthuman(ist) materialism sits uneasily between social

¹⁸ Representationalism is a result of Cartesianism (Barad, 2003: 806), which introduced a split between ‘external’ and ‘internal’ leading to the anthropocentric perception of a fragmentary world (cf. Chapter I).

constructivism and natural determinism. “Matter is not immutable or passive”. Barad argues that:

“[w]hat is needed is a robust account of the materialization of *all* bodies – 'human' and 'nonhuman' – and the material-discursive practices by which their differential constitutions are marked. This will require an understanding of the nature of the relationship between discursive practices and material phenomena, and accounting of ‘nonhuman’ as well as ‘human’ forms of agency, and an understanding of the precise causal nature of productive practices that takes account of the fullness of matter’s implication in its ongoing historicity” (original emphasis. 2003: 810).

Up till now, matter has not yet been ‘freed’ of its connotation with passivity. Barad refers to the attempts done by Michel Foucault and Judith Butler to address matter as more active, and as an inseparable part in the analyses of discursive practices of bodily production. However, according to Barad they have never completely succeeded. Rather they implicitly re-inscribed matter’s passivity; this, she argues, is a remnant of representationalism (2003: 809); there has been a slippage in overlooking:

“the nature of power in the fullness of its materiality. To restrict power’s productivity to the limited domain of the ‘social’, for example, or to figure matter as merely an end product rather than an active factor in further materializations, is to cheat matter out of the fullness of its capacity” (2003: 810).

Barad is emphasizing the interplay of the active 'social' *and active 'natural'* forces that are at work. Contradicting the dominant mechanistic paradigm, Barad claims that the activity of matter as an important generative force should not be dismissed.

For Barad bodies only come about in relation to each other, i.e. nothing pre-exists their relatings. On that note, she tackles the concept of “*thingification* – the turning of relations into ‘things,’ ‘entities,’ ‘relata,¹⁹” with the question: “why do we think that the existence of relations requires relata?” (2003: 812). Barad reasons together with the physicist Niels Bohr that “things do not have determinate boundaries or properties, and words do not have inherently determinate meanings” (2003: 813); So rather than talking of relata (‘knower’, ‘words’, and ‘things’) Barad argues instead

¹⁹ “*Relata* are would-be antecedent components of relations. According to metaphysical atomism, individual relata always preexist any relations that may hold between them” (Barad, 2003: 812).

for

“a causal relationship between specific exclusionary practices embodied as specific material configurations of the world (i.e., discursive practices/(con)figurations rather than “words”) and specific material phenomena (i.e., relations rather than “things”) This causal relationship between the apparatuses of bodily production and the phenomena produced is one of ‘agential intra-action’” (original emphasis. 2003: 814).

As mentioned earlier, properties are not inherent to ‘things’ (which again according to Barad do not (pre-)exist), rather properties belong to ‘phenomena’. “[A] *phenomenon* [is] the inseparability of ‘observed object’ and ‘agencies of observation,’” (2003: 814) – closing the gap between knower and known. Inherent properties and boundaries only emerge in causal relations. They do not belong to autonomous entities; they belong to phenomena and do “not take place in space and time but in the making of spacetime itself” (2003: 818). Following from this, Barad then coins the term *intra-action* rather than *inter-action*, where *inter-* would imply the existence of entities *a priori* their relatings while *intra-* would suggest the emergence of specific properties and boundaries *in* the moment of relating phenomena in ‘spacetime’. What looks like inherent properties and fixed boundaries are, in fact, material-semiotic temporalities. Phenomena or relations are the smallest units of analysis.

Further, Barad says that “matter is substance in its intra-active becoming – not a thing, but a doing, a congealing of agency. Matter is a stabilizing and destabilizing process of iterative intra-activity [...] *matter refers to the materiality/materialization of phenomena*” (2003: 822). Matter, to Barad, is never fixed, but an active force, participant and ‘agent’ within shifting “boundary-making practices” (2003: 819).

The argument of Barad that I want to take up here is that agency is not a human attribute; we do not possess it. It cannot even be called an attribute; agency is “the ongoing reconfigurations of the world” (2003: 818). Challenging mechanism Barad argues that matter is agential intra-action; an *active* posthuman performativity. In a direct opposition towards reductionism, Barad highlights the importance of relations. I read her notion of agency as a form of nonhuman resistance, which has to be taken into account in the resistance against biopiracy/biocolonialism, which sees biodiversity as a ‘raw’ and passive resource for exploitation. She points out that ‘we’ (‘humans’ and ‘nonhumans’) are neither outside nor in nature as separate,

autonomous entities, we are part *of* it (2003: 828-9). Conceptualizing that we are *part of* the world instead of *being in* it would forefront our (human) expected and (posthuman performative) unexpected material intra-actions with the environment and thus invokes a less anthropocentric perspective.

From Speciesism Towards Companion Species

In order to further develop my argument in favor of a multispecies existence – foregrounding that there are no separate, autonomous entities – I must encounter the hierarchy of species. In his book *Animal Rites* (2003) Cary Wolfe brings to the fore the problem of speciesism.²⁰ According to him speciesism is the unexamined -ism that sits easily between racism, (hetero)sexism and classism. Like those other discriminatory frameworks, speciesism is a form of institutionalized discrimination based on a set of taxonomic characteristics of difference defined by humans. (Difference, in this case, is read as a negative ‘otherness’.) Speciesism is that form of discrimination based on species, from which also a strong hierarchical anthropocentric order follows, i.e. the human species are on top and thus automatically exert domination over nature. Wolfe states that this invisible speciesism continues to put humans at the center while paradoxically enough a lot of

“the traditionally distinctive marks of the human (first it was possession of a soul, then ‘reason,’ then tool use, then tool *making*, then altruism, then language, then the production of linguistic *novelty*, and so on) flourish quite reliably beyond the species barrier” (original emphasis. 2003: 2).

The flourishing of these so-called human idiosyncrasies across the realm of species shows the arbitrariness on which the ‘human/nonhuman animal’ distinction has been drawn. In his book Wolfe argues, in particular, for the deconstruction of speciesism in regard to the nonhuman animal species. In search for a productive resistance against biopiracy/biocolonialism, however, I need to move beyond that distinction and also include the nonanimal species, such as seeds and plants into the relational conversations towards new ontologies.

²⁰ Peter Singer popularized speciesism in his book *Animal Liberation* (1975). Speciesism is, he wrote, “a prejudice or attitude of bias in favour of the interests of members of one’s own species and against those of members of other species” (Singer in Rossini, 2006)

Another interesting point Wolfe puts forward in *Animal Rites* is that for as long as speciesism remains unacknowledged and allowed for, humans, too, are at risk of its consequences. Both humans and nonhumans have something to gain from the abolition of the discourse on speciesism. As long as the discourse on and the institution of speciesism are left intact, humans could use the hierarchical mechanism of speciesism against other humans in order to degrade them and justify certain acts (2003: 8). Examples of such justifications are numerous in colonial history (such as the rationale of *terra nullius* in which indigenous people were regarded as part of the *fauna* (see Chapter 1)). More recent examples are Abu Ghraib, Guantanamo Bay and many of the leaked out U.S. military videos in which alleged (nonwhite) terrorists are downgraded to the status of the nonhuman animal. These people can be humiliated and treated sadistically, because the institution of speciesism grants hurtful inflictions and the killing of nonhuman animals as legitimate (Manuela Rossini, 2006).

The acknowledgment of the discourse on and the institution of speciesism would be the first pragmatic step towards a less anthropocentric humanism – a posthumanism in the sense that this thesis wants to suggest as useful for a better understanding of the world that is more inclusive in respect to the multiple material embodiments and entangled discursive relations that exist within biodiversities. However, moving beyond species limitations will not be an easy task, if not impossible. The feminist biologist Donna Haraway says in as much when she argues that “[...] living as species is non-optional. We have been worlded as species in a kind of Foucauldian sense of discourse producing its objects again. Two hundred years of what became the powerful world-changing discourses of biology have produced us as species, and other critters too” (Haraway quoted in Nicholas Gane, 2006: 144). Her work, however, is dedicated to broaden our experience of a multispecies kinship and belonging together.

In 1991 Haraway published her famous *A Cyborg Manifesto* in which she appropriated the scientific and military-born cyborg to do feminist work. The cyborg was the first and simultaneously the youngest of siblings in a broader family of kinship relations (Haraway in Gane, 2006: 144; Haraway, 2003: 11). Just over a decade later Haraway released her second manifesto *The Companion Species Manifesto* (2003) in which she expands her family of manifold figurations. The cyborg alone does not suffice. It is according to her one of the most recent phenomena of relational and ambiguous figurations at its most a century old (Haraway in Gane,

2006: 147); much older, though, ancient and present at least since the dawn of humankind, are what Haraway calls our ‘companion species’ (2003).

In her latest manifesto Haraway tries to sweep the human off the center stage. Companion species that require always “at least two to make one” (Haraway, 2003: 12) are, “mortal, finite flows that are about heterogeneous relationship – and not about ‘man’ [...] The relation,” she continues, “is the smallest unit of analysis, and the relation is about *significant otherness* at every scale” (my emphasis. 2003: 24). Haraway is doing to species what Barad has done to matter. Just like Barad, Haraway brakes with the mechanistic and reductionist paradigm by acknowledging that the relation and not a sub-atomic fragment is “the smallest unit of analysis”; as such she generates a point of departure for thinking differently. This quote also illustrates that ‘we’ as partners and subjects are in the continual process of material-semiotic becoming in relation to others. The significant others are not just our human others. It is every piece of discursive and nondiscursive materiality we encounter in what Haraway has termed naturecultures.²¹

In a highly paradoxical way, Haraway by stressing the concept of species is reworking speciesism; she tackles it. Talking about *companion* species takes away the hierarchical aspect in the discourse on and the institution of speciesism. Species are inherently oxymoronic, because every species internally consists of multiple other species. For that reason, none can be human; companion species do not tolerate human exceptionality (2009: 280), which is an ideology that comes forth from a speciesist discourse. Companion species lack a foundation, or story origin, they have co-emerged together in heterogeneous relations (2003).

The concept of companion species also finds resonance in Lynn Margulis' theory on (endo)symbiogenesis and co-evolution (Margulis and Sagan, 2007). As a provocative evolutionary biologist, Margulis also is trying to unwork a strong sense of hierarchical taxonomical thinking, (genetic) determinism, and reductionism all of which are prevalent paradigms in the fields of biology. She does so because ‘nature’ as a continuum stretching from the inanimate to the living “does not conform to our definitions” (2007: 90). Starting with Linnaeus, our gradable taxonomical thinking

²¹ Naturecultures are a transgression of the nature/culture binary (as well as other dichotomies) in which “[f]lesh and signifier, bodies and words, stories and worlds” are joined (Haraway 2003: 20). Naturecultures point toward the entanglements with no origins. Natures and cultures do not exist separately. “There is no foundation” (2003: 12), but they co-create each other into a multiplicity of (temporary) naturecultures.

has contributed to speciesism by providing a deterministic starting point. The traditional evolutionary tree, for instance, is read vertically with the more advanced species at the top, i.e. *homo sapiens* at the summit. Margulis, however, is undoing this highly anthropocentric framework. With her ideas on symbiogenesis and co-evolution she shows how we as humans have incorrectly distinguished ourselves as autonomous beings that have control over the environment.

Margulis describes how via endosymbiogenesis bacterial entities have merged with nucleated life forms to create new collectives²² (2007: 31). Further, symbiogenesis shows how genetic information flows not just vertically down the line of hereditary genealogy, but simultaneously horizontally between the members of a species and between different species. Most controversial in this regard is Margulis' challenge to Darwinian thought, which foregrounds the concept of 'survival of the fittest', by saying that "[l]ife took over the globe not by combat but by networking. Lifeforms multiplied and grew more complex by co-opting others, not just by killing them" (2007: 32). Darwinian evolutionary theory assumes that evolution is progress at the expense of others, but thinking in terms of co-evolution, 'life' is merely an expanding network of interdependence, as it is becoming ever more complex (2007: 89).

Symbiogenesis and co-evolution are the driving relational forces behind companion species. Symbiogenesis and co-evolution are creative and generative, and have played key roles in the biggest diversifications of species, for instance the emergence of nucleated life forms (2007). In line with symbiogenesis and co-evolution is that of all the species "none is 'more evolved' than any other" (2007: 33), i.e. all are companion species. Species cannot live autonomously. Such an understanding of co-evolution and companion species disrupts the hierarchy of speciesism. Even though it is hard to imagine that a human is not higher in the so-called evolutionary ladder than a bacterium, we have to acknowledge that, neither the human, nor any other life form, is able to exist autonomously – especially the human.²³ Without significant others biodiversities and 'life' would not be sustainable.

²² Animal and plant cells contain mitochondria, which are organelles possessing their own bacterial DNA. Mitochondria convert oxygen in usable energy. In addition, plant cells and algae also contain chloroplasts, which produce oxygen. Moreover, these have produced the total amount of global oxygen since the dawn of 'life' (Margulis and Sagan, 2007)

²³ Besides mitochondria, the 'human' body, for instance, houses ca. 2 kg of bacterial cells all over the skin and lining the digestive trajectory. The total amount of bacterial cells outnumbers human cells 10 to 1. These bacterial cells provide amongst others protection and aid digestion in order for the 'human'

'Life': Zoe as the Significant Other of Bios

For a constructive resistance against biopiracy/biocolonialism we also need to understand 'life' differently, because of its mechanistic and reductionist approach as 'life itself'. The feminist philosopher Rosi Braidotti has called for a focus on *zoe*, the 'other', animal half of 'life' (2006a: 37). She claims that 'life' is made up out of both an animal half, *zoe*, as well as a discursive half, *bios*. Defined as "the discursive production of meanings of life" (2006a: 47), *bios* is that part of 'life', which is subject to (human) power. As such I have come to associate *bios* with the colonization of 'life itself'. The introduction of *bios/zoe* "[makes] the notion of life more complex, this distinction implies the notion of multiplicity" (2010: 208-9); 'life' is no longer a singular 'thing' set out in a dualism against death. *Bios/zoe* have to be seen as each other's significant other. Together they relate and make up 'life', which, in line with Barad, is not a 'thing' with inherent properties but a phenomenon of ongoing reconfiguration. 'Life' is 'the making of spacetime'.

Zoe is the animal force and *bios* is the political and discursive half. *Bios* is the attempt to discipline 'life'. From an anthropocentric perspective *zoe* is thus seen as subservient to the rational force of *bios* (2010: 207). However, "[z]oe, or the generative force of non-human life," Braidotti writes, "rules through a trans-species and transgenic interconnection, or rather a chain of connections, which can best be described as an ecological philosophy of nonunitary, embodied subjects and of multiple belongings" (2006b: 203). *Zoe* as the 'other' of discursive *bios* fights back (2006a: 107); it is "a *nonhuman* yet affirmative life-force" (my emphasis. 2010: 203). Braidotti, however, argues that *zoe* is the significant other: intrinsic, independent, and beyond control. *Zoe* does not adhere to logos (2010: 208). "*Zoe* refers to the endless vitality of 'life' as continuous becoming" (2006a: 41).

Braidotti approaches 'life' as a positive, productive, and (re)generative force emphasizing mutual interdependence rather than considering the fragmentary parts of 'life itself'. Like the posthuman(ist) understanding of matter and species, the reconceptualization of 'life', too, foregrounds the notion of relationality. Braidotti makes us aware that both forces, *bios* and *zoe*, coincide within the 'human' and 'nonhuman' body. Especially, within the 'human' body this has led to contention and the casting of the fully-fledged 'human' (*bios*) as "to be identified with male, white,

body to function properly.

heterosexual, Christian, property-owning, standard-language-speaking citizens” (2006a: 37). All the ‘others’ (woman/native/nature/animal/plant/soil etc.) have automatically been closer connected to *zoe*.²⁴ Emphasizing that ‘life’ inextricably is both *bios* and *zoe* would disrupt such categorization fed by hierarchal and anthropocentric thinking. Braidotti as such, too, argues against speciesism.

“Thus, affinity for *zoe* is a good starting point for what may constitute the last act of the critique of dominant subject positions, namely the return of animal, or earth life in all its potency. The breakdown of species distinction (human/non-human) and the explosion of *zoe*-power, therefore, shifts the grounds of the problem of the breakdown of categories of individuation (gender and sexuality; ethnicity and race)” (2006a: 97).

Braidotti’s move of turning ‘life’ into multiplicity by highlighting the concurrence of *bios/zoe* in *all* bodies (‘human’ and ‘nonhuman’) fits Barad’s agential intra-action and Haraway’s companion species, because neither pre-exists the other; it takes at least two to make this one phenomenon. Nothing precedes its relatings. *Bios/zoe* intersect at the materialization of ‘human’ and ‘nonhuman’ bodies. *Bios/zoe* are like companion species cannot that exist separately; *bios* is the “discursive production of meanings of life” and *zoe* is the “surplus vitality of living matter” (2006a: 47). Each time they intra-act they create different boundaries and distinct properties – engaging in world making practices.

Moreover, *bios/zoe* favors Wolfe’s critique on speciesism and Haraway’s companion species because *zoe* is that which ‘we’ all share equally; ‘we’ being all ‘humans’ and ‘nonhumans’. *Bios/zoe* then becomes “a major transversal force that cuts across and reconnects previously segregated domains” it calls for a “trans-species solidarity on the basis of our being environmentally based, that is to say: embodied, embedded and in symbiosis,” (2006a: 99). ‘Life’, as a phenomenon, then can never be owned, or, belong exclusively to one (human) species. ‘Life’ is “process, interactive and open-ended” (2006:a 99). Braidotti’s posthuman(ist) understanding of ‘life’ as *bios/zoe* undermines the mechanistic and reductionist paradigm of biopiracy/biocolonialism that approaches ‘life’ as ‘life itself’ – a commodity. Reemphasizing *zoe* as that which reconnects all, while simultaneously keeping in

²⁴ Rosi Braidotti illustrates this argument with the case of motherhood, which “has traditionally been considered as an automatic biological process, while fatherhood is seen as a social and cultural institution that rules over and governs biological relations” (2006a: 104).

mind *bios*, would revitalize the pre-Cartesian organismic model of *change*, while incorporating the power relations and meaning making of both discursive and nondiscursive practices.

Intelligence in Biodiversity

‘Life’ is a key force to biodiversity – a vital life-sustaining system. I would therefore argue that biodiversity is also made up by both *bios/zoe*. *Bios*, as the “discursive production of meanings of life”, is that part of biodiversity, which has been disciplined and is knowable. In the context of biopiracy/biocolonialism, transnational corporations rely on *bios*; they produce the economic meanings and values of biodiversity, which they approach as a ‘raw’ resource. In Chapter I, I have argued that the new biotechnologies have disciplined ‘life’ into the fragmentary parts of ‘life itself’. For these genetic parts to become a market commodity, thus, scientists assign them a distinctive meaning, value and purpose within a capitalist context. ‘Life’ (i.e. a kind of bacterium, a type of plant, or a seed variety) is reduced to one genetic fragment that yields profit. The phenomenon is ‘thingified’ (Barad, 2003).

Zoe, however, is being overlooked in the context of biopiracy/biocolonialism. *Zoe* is the ongoing changeability of ‘life’. It is beyond control; it is the unexpected; *zoe* is the posthuman agency in biodiversity. Based on *zoe* ‘life’ cannot be owned because ‘life’ is an active doing which is never the same – an ongoing reconfiguration. ‘Life’ as a phenomenon rather than a ‘thing’ cannot be reduced.

Based on the idea of *bios/zoe* I want to advocate the notion of a posthuman(ist) intelligence²⁵ in biodiversity. Local life-sustaining biodiversities come forth from the generative and reciprocal relationship between matter’s materializations and intelligence. Both discursive and nondiscursive practices shape biodiversities. By intelligence, however, I do not mean the human ‘Ratio’, but rather that “biodiversity carries the intelligence of three and a half billion years of *experimentation* with life-forms” (my emphasis. Shiva, 1997: 67). Rather than an exclusively ‘human’ intelligence I want to emphasize a multispecies embodied intelligence.

A relationship is full of intelligence (Haraway: 2003: 12). This posthuman(ist) intelligence exists between the animals, bacteria, seeds and plants, and also humans within biodiversity. Instead of following logic a posthuman(ist) intelligence is a

²⁵ As a more pragmatic strategy towards a less anthropocentric humanism, the political theorist Jane Bennett proposes the tactic of anthropomorphism, to see resemblance between ‘human’ and ‘nonhuman’ agents (2010: xvi, 119-120).

always proliferating experiment. Networking, co-evolving and living in symbiosis would require a posthuman(ist) embodied intelligence; in order to know and remember which close encounters are productive, and which are hurtful. It is an active, creative and generative force immanent to all species responsible for the diversification and ongoing reconfigurations of multispecies (i.e. evolution) through a process of experimentation. A process of trial-and-error/success, which depends on expected and unexpected close encounters such as endosymbiogenesis followed by embodied memorization, inscription in the ‘flesh’ (i.e. the intelligence *in* biodiversity).

Multispecies embodied intelligence has co-created the vast (bio)diversity that exists today. The intelligence in biodiversity thrives generatively across the genealogical and horizontal lines of symbiotic co-evolution. And it will also continue to thrive. Where the Western human ratio aims to reduce complexity into knowable fragments thus failing to comprehend the holistic idea of interconnectedness, an embodied intelligence in biodiversity is responsible for the ongoing reconfigurations and world making practices of our multispecies existence. Posthuman(ist) intelligence in biodiversity is not an exclusively ‘human’ idiosyncrasy but that it is a *force* that “[flourishes] quite reliably beyond the species barrier” (Wolfe, 2003: 2). Human ratio is not capable of reducing the posthuman(ist) intelligence in biodiversity.

All in all, biodiversity rather than a ‘raw’ resource (for exploitation) is the ensuing phenomenon of a complex and intelligent symbiotic network of intra-acting multispecies, which we humans instead of controlling ‘it’, take part in and are part of (Barad, 2003). There are many more ‘nonhuman’ agents and forces than we assume. The Western world has to overcome the ontological gap between ‘knower’ and ‘known’, and start to acknowledge our ‘human’ participation as companion species within the phenomenon that is biodiversity. In the next chapter I will inquire into possible pragmatic ways of how to overcome that gap.

CHAPTER III

TOWARDS ‘OTHER’ CONVERSATIONS

“Performative correspondence does not absolutize the relation between the object and the subject by fixing the correlate as exhaustive or as exhausting everything there is” (original emphasis).

– Aud Sissiel Hoel and Iris van der Tuin (n.y.: n.p.)

In need of a pragmatic strategy of resistance against biopiracy/biocolonialism I turn to the field of contemporary art in this last chapter. Due to my participatory activities in the upcoming art manifestation *Yes Naturally: how art saves the world* (2013)²⁶ I have come to understand contemporary art as an alternative system of knowledge production that could play a central role in the move towards new ontologies of becoming on a more everyday level of embodied experience. Many contemporary artists are less concerned with the maintenance of fixed or conventional boundaries; they rather explore how to stretch and transgress these restrictions. In that exploration they produce knowledge. The anthropologist Tim Ingold and the feminist biologist Donna Haraway, who are both contributing to the forthcoming publication of *Yes Naturally*,²⁷ have expressed similar ideas about the role of contemporary art (cf. Ingold, 2013 forthcoming; cf. Dolphijn/Haraway, 2013, forthcoming).²⁸

Artistic director Ine Gevers has argued that certain artists grant their artworks the ‘status of subject’ meaning that these artworks stand in a direct dialogical relation to the spectator, but also, to other artworks and the environment. Such artworks are never finished (2009: 24). Art, then, comes to mean an open-ended and active engagement *always already becoming* within the environment. Embedded in a non-discursive and visual discourse, contemporary artists often wield a unique perspective, and driven by precarious curiosity they expose themselves to the responsibility for

²⁶ See Chapter I note 12.

²⁷ See Chapter I note 13.

²⁸ In the upcoming *Yes Naturally* book Ingold, for instance, has made an appeal on the *art of inquiry* in which every artwork should be regarded as an experiment (2013, forthcoming). Art should produce knowledge from within and through the process of inquisitive creation. In an interview for *Yes Naturally*, Haraway expressed that the artwork, as *un expérience* (both as scientific experiment and artistic experience), moves forward into the near future in search of possible close encounters, risking both the expected and the unexpected (cf. Dolphijn/Haraway, 2013, forthcoming).

whatever they might encounter (ibid.). For that reason I have chosen to analyze four contemporary artworks that enable the formation of novel connections between the pressing issue of biopiracy/biocolonialism, posthumanist thought and society. These artworks are exemplary for a productive engagement with the world so that ‘we’ (‘human’ and ‘nonhuman’) can change ‘this’ (biopiracy/biocolonialism) towards a more heterogeneous multispecies existence.

Granted the ‘status of subject’ contemporary art is not a description of reality (representationalism) but sets up a relational conversation. As a nexus of discursive and nondiscursive practices, an artwork should provide a point of departure for future conversations between ‘human’ and ‘nonhuman’ agents. The feminist physicist Karen Barad says in as much when she argues that “[t]he move toward performative alternatives to representationalism shifts the focus from questions of correspondence between descriptions and reality (e.g., do they mirror nature or culture?) to matters of practices/doings/actions” (2003: 802). All of the following artworks go beyond a description of ‘reality’ and practice/do/act/invite an active critical engagement between spectator-‘we’-artwork-‘this’. Because the viewer of such pieces of art is compelled to enter into a dialogical relation I will call her/him a specta(c)tor.

Seeds of Victory?

From a distance the future specta(c)tor sees a sixteen-meter long concrete planter box, which is installed upon 160 thin and crooked hazelnut branches – the entire structure painted white. The planter is filled with turf and overgrown with a nicely trimmed grass lawn. Seeding packets on sticks are distributed all over the length of the planter. The specta(c)tor, yet unaware of what is to come, is drawn by the work’s aesthetically appealing – white, clinical, sterile, clean, safe-looking – design and perhaps misled by the rather upbeat title. An unexpected experience awaits the approaching specta(c)tor. The unawareness remains until it is too late. Close encounter is necessary in order to know what the work entails. Upon being near enough it becomes clear that these are not your everyday seed packets.

The Austrian artist and feminist Ines Doujak presented her installation *Siegesgärten/Victory Gardens* (2007) for the first time at the twelfth documenta in Kassel, Germany.²⁹ For this installation Doujak fabricated special seed packets

²⁹ Documenta is a large-scale art exhibit on modern and contemporary art. It is held every five years in Kassel, Germany, for 100 days. In 1955, documenta was founded as an attempt to stimulate modern art

printed with Agitprop-slogans³⁰ (Peter Roos, 2007), such as: “Biopiracy: ‘external’ and ‘internal’ conquest,” “Terminator Technology,” “Autonomous Service for Intellectual Property,” “Patents instead of bombs: Iraq is being robbed of its nutritional sovereignty,” “Eigentumsrecht auf menschliches Gewebe,” “Einsprüche: Kein Patent auf Leben!” and “Rapunzel ‘raubt’ Rapadura: Bio heißt noch nicht ‘Fairer Handel.’”³¹ Simultaneously, most of the seed packets depict images of queered (feminine) sexualities, drag kings and queens, and fetishized practices all set against a ‘natural(ized)’ backdrop (fig. 1). The specta(c)tor is at once provoked by this unexpected queered encounter.

The origins for the title *Siegesgärten/Victory Gardens* can be traced back the World Wars of the previous century. During those wars the (Western) world experienced a major fall in food production due to the mobilization of all able men to go to battle. As a response the U.S. had formed the National War Garden Commission. This commission lead by Charles Lathrop Pack published the book *The War Garden Victorious* (1919) that would teach the public how to grow a garden. Moreover, Agitprop-posters (fig. 2.) were spread across the nation encouraging the people to plant their own Gardens of Victory in order to increase food production. It was a patriotic call to help benefit the war. Now, Doujak has adopted this title and style in order to ‘propagate’ her battle. A battle, however, fought for dissimilar reasons and aimed at a different outcome.

From the instance of provocation the specta(c)tor is made aware of the gravity of the issue Doujak and her project engage with. *Siegesgärten* puts the specta(c)tor in a direct dialogue with the issue of biopiracy/bicolonialism because of the tangible above mentioned case studies it provides. Doujak and her queered project move beyond the layer of representationalism – *Siegesgärten* is an intervention. The queered imagery induces an embodied experience. The materiality of the work also brings about an embodied experience. The specta(c)tor feels at first drawn by the materiality of the work, the white cleanliness, the leanness of the branches, the freshness of the lawn grass which over time slowly turns brown, yet at the moment upon approaching s/he experiences shock when looking at the blunt images. An

in Germany after WOII.

³⁰ Agitprop is abbreviated from ‘agitation propaganda,’ which has its origins in the former USSR; it was used as a strategy to both appeal to an emotional state (agitation) as well as to educate and to indoctrinate (propaganda).

³¹ Translation: “Ownership claims on human tissue,” “Objection: No patents on life!” and “Rapunzel ‘steals’ Rapadura: Bio does equal ‘Fair Trade.’”

internal conflict arises, a kind flight-or-fight instinct.

Curiosity backed up by the safety of the space gets the overhand and the specta(c)tor remains close to the work; peaking at first, but then genuine interest in the informational texts on the back of each seed packet firmly captures the specta(c)tor's gaze. S/he has to work/practice/do/act/overcome in order to be able to approach the work and afterwards the specta(c)tor is rewarded with unsettling information – s/he is being educated and compelled to think about biopiracy/biocolonialism. Both are rather unexpected consequences for the conventional art viewer. Moreover, some images return the specta(c)tor's gaze immediately.³² In the image of seed packet #038 (fig. 1), for instance, the gaze, a queered gaze is returned. The specta(c)tor is being caught looking at and participating in an act of perversity. The explicit act of perversity is the force-feeding portrayed in the image. But the implicit perverse act is the issue of biopiracy/biocolonialism,



Figure 1. (above): Front cover of the seed packet #038. Ines Doujak – *Siegesgärten* (2007).



Figure 2. (right): Patriotic Agitprop for the War Gardens (from 1918).

³² The expression of these returned gazes are diverse. Seed packet #004 depicts a BDSM-practice. The gaze of the dominatrix' is fierce and looks directly at the specta(c)tor. Two women are portrayed on #009. One completely naked, legs spread and her head turned away from the voyeur. A classic representation of female nudity if it were not for the second women, who – fully dressed – is looking down at the specta(c)tor with a patronizing gaze. Packet #031 shows a bald woman sucking her own nipple while staring to the specta(c)tor seductively. The bald an bare chested woman on packet #069 wearing a crown of leaves returns a gaze with a complacent smile.

which the specta(c)tor takes part of. The specta(c)tor is being pushed out of its comfort zone as an unknowing passive consumer. Doujak engaging in the act of truth-telling presents the fictional facts on capitalist consumerism.

As a feminist what Doujak wants to foreground in *Siegesgärten* is the inextricable connection between the conquest and control of female bodies as well as the conquest and control of the interior territories that have been defined as ‘life itself’ (Chapter I). Seed packet #060 reads: “Women and Biopiracy: Biopiracy endangers traditional female systems of knowledge.” Women are often connected with the reproductive field including the preservation and cultivation of biodiversity (cf. Vandana Shiva, 1997). With the rise of the agro-chemical industry and the spread of monocultures women (and seed varieties) are being marginalized. Doujak reveals this connection between marginalized ‘human’ and ‘nonhuman’ players by the presentation of queered bodies. Her images are at the same time unsettling, serious, provoking, ironic, frightening and grotesque. They invite the specta(c)tor to (re)think biopiracy/biocolonialism and what it implicates to *all* material bodies. Sixty-nine seed packets create an enmeshed network of connectedness showing the effects of biopiracy/biocolonialism while situating the specta(c)tor. *Siegesgärten* also shows vulnerability and provokes the responsibility of the specta(c)tor who, after gaining this knowledge, has been turned into an active agent, inescapably having to chose in which ways s/he will participate.

Siegesgärten is not only about provocation and raising awareness, let alone about spreading apocalyptic convictions. The installation recounts comforting and affirmative stories as well. Like stories about grassroot movements that have challenged transnational corporations; small-scale activist organizations that dared make a stance, and win. For instance, the Amerindian Tulalip who got their rights (over the genetic diversity of their lands) protected in the Treaty of Point Elliot as early as in 1855 (seed packet #065). Such affirmative stories offer a feeling of hope that will encourage active engagement. Meanwhile, because these case studies are very localized they make the specta(c)tor feel that s/he can actually do something on a small-scale. That s/he does not have to solve the global issue but can start close to home.

What Doujak has planted in her material garden is certainly not the prospects of a near victory. Through the collection of local stories worldwide, however, she managed to tap into the act of truth-telling. Doujak thus engaged an alternative and

artistic mode of knowledge production. She did not merely describe what is happening in ‘reality’. Her installation rather inquired into the power relations and the causal infrastructure that constitutes biopiracy/biocolonialism. At the same time she drew on the patriotic history of the so-called War Gardens or Gardens of Victory, local gardens mainly nurtured by women to ensure food sovereignty, and to benefit national economy. She implicitly put these historical connotations in comparison to her installation and to biopiracy/biocolonialism in which agricultural female systems of knowledge, food sovereignty, and local economies have all become endangered instead of stimulated.

Via the use of aesthetics, queered provocation, story-telling and affirmatively, Doujak planted a conflicted and embodied experience in the specta(c)tor. This embodied *expérience* in combination with the inquiry and the fictional facts she presented forms a point of departure from which a conversation between biopiracy/biocolonialism and the public can take place – the specta(c)tor has to actively choose whether to be knowingly aware or to be knowingly ignorant. Thus *Siegesgärten* unexpectedly and actively relates the specta(c)tor into being part of the biopiracy/biocolonialism issue.³³ The installation invites to (re)think: what are ‘true’ seeds of victory? As well as, in what ways am I accountable for the exploitative practices of biopiracy/biocolonialism and how could I subvert these?

(Re)connecting Seeds and Soil

Another artist who also critically addresses the matter of seeds within the context of biopiracy/biocolonialism is the Delphi-based Amar Kanwar. During dOCUMENTA (13) Kanwar presented his multimedia installation *The Sovereign Forest* (2012), which includes videos, books, and actual *seeds*. The installation is exhibited in two darkened rooms that were painted black. Upon entering the specta(c)tor feels like s/he will be revealed a dark and mysterious secret. The sounds coming from the large video installation, also heard into the second adjoining room, have an overall mystifying effect. *The Sovereign Forest* affects multiple senses. The video shows four different scenes set in the state of Ossira, India. Time passes by very slowly as the specta(c)tor sits down and watches these different pastoral scenes where nothing seems to be happening, yet leaves the room differently due the strong haptic quality of

³³After the temporary exhibit at Kassel, the seed packets have been collected and turned into a book (*Biopiraterie/Biopiracy*, German/English, 2008) in order for the dissemination of knowledge production to continue.

the film.

Upon walking into the second room, still bedazzled by the mystic experience of the video, the specta(c)tor enters the geopolitical and socio-ecological arena of the seed. Against the wall hang 266 little wooden boxes each of them displaying a distinct native variety of rice, a rich diversity, which has actively co-evolved within local biodiversities during millennia – a story without a fixed origin. Seeds and humans have needed each other ever since the beginning. Their relation to each other has been essential for survival. Seeds are the carriers of ‘life’, they not only reproduce their own species, they also sustain other life forms; they feed humans and humans yearly reproduce the seeds to assure their (re)production. The combination of human cultivation and nonhuman exchange results in expected and unexpected diversity. Through close attentive relations humans and nonhumans have secured the continuation of each other’s existence – always adapting and changing to each other’s needs.

The specta(c)tor learns, however, that only some twenty of the original three hundred native varieties are still cultivated today. The artist attempts to reconnect these two lost companion species through his work. Kanwar, as if he were exhibiting pieces of evidence, has brought these actual seeds over to Kassel. The physical introduction of the seeds enables a close encounter between the specta(c)tor and the seeds to take place; a specta(c)tor who probably has no direct material connection to food production. Many of the specta(c)tors might even have never seen these food providing life-sustaining seeds this close. The context and soberness in which these seeds are presented emphasizes the vulnerability of this companion species relation.

However, the seed is not the only vulnerable agent in this companion species relation. Via the rise of (GM-seed) monocultures biopiracy/bicolonialism inflict ecological *and* social damage. Instead of focusing on relationality these monocultures foreground capitalist profit, and as such are responsible for the global disappearance of local life-sustaining biodiversities (cf. Shiva, 1997) that forefront multispecies relations. In *The Sovereign Forest*, Kanwar makes explicit the connections between this ecological crisis and a severe social phenomenon. On a small wooden shelf embedded between all the seeds a thin booklet is presented. This booklet is filled with pictures of Indian farmers. These are the portraits of Indian farmers, who have committed suicide. Often seeing death as the only way out of their increasing debts due to rise of monocultures, these farmers have decided to take their own lives

(Richard Swift, 2007; Amol Dongre and Pradeep R. Deshmukh, 2012; P.B. Behere and A.P. Behere, 2008).

The disappearance of seed varieties and the increase in Indian farmers' suicides are directly connected. The U.S.-based artist Claire Pentecost emphasizes this interconnectedness when she states that “[a]s a material form of collective knowledge, seeds constitute one of the longest-running open-source systems in history. Agricultural diversity is not simply spontaneous but is the product of centuries of attentive cultivation and unregulated exchange” (Claire Pentecost, 2012: 5). Kanwar literally bringing the specta(c)tor and the seed together provokes the specta(c)tor to see the socio-ecological interconnectedness.

Seeds were also the point of departure for the installation artist Pentecost. She exhibited her inquisitive work *Soil-erg: when you step inside you see it is filled with seeds* (2012)³⁴ at dOCUMENTA (13) in a room next to the art of Kanwar. *Soil-erg* critiques the international agro-lobby and (bio)patents on life forms. Pentecost placed two huge colonial tables in the middle of the room with bars piled up on top of them. Unlike usual these bars are not made of gold but they have been made out of compressed composting soil. The tables and the bars are a reference to the colonization that continues today via the appropriation of soil and seeds. These gold bars simultaneously denote the precious value of soil.

Soil-erg is an inquiry into a new system of value, which is based on composting (living) soil instead of money. Sketches of money notes cover the walls. These drawings depict different scenes that relate to soil: from amoebae to ecofeminist Vandana Shiva; from slogan such as “SOYA = MUERTE”³⁵ to Charles Darwin; from Donna Haraway with her dog (saying “life is a verb”) to interior organs; from rhizomes to dinosaurs. Every sketch carries the value of one soil-erg, and like ‘real’ money, it also shows facial portraits. Besides the portraits, discs of compressed and dried compost hang on one wall. Against another wall stand two pillars resembling wall clocks. One of these pillars houses a micro-ecosystem where food waste and worms produce composted living soil – i.e. soil-erg. The second pillar, filled with stones, has headphones connected to it through which the specta(c)tor hears soft rumbling noises. S/he has to prick up her/his ears to the muffled sounds that

³⁴ This installation made in commission for dOCUMENTA (13) was realized in collaboration with the department of Organic Agricultural Sciences, University of Kassel, and Can YA Love.

³⁵ Translation: “SOY = DEATH”. A slogan used by Argentinian peasants defending biodiversity and subsistence farming against the invasion of Monsanto’s genetically modified soy monoculture.

make one think s/he is hearing the composting in real-time.

Although seeds were also the point of departure for Pentecost, she turned to soil – the “silent partner”, which is needed to grow the seed (2012: 4). Pentecost, however, approaches soil from a posthuman(ist) perspective acknowledging “the relationship between discursive practices and material phenomena” (Karen Barad, 2003: 810). She says in as much when she writes that “[l]ike the seed, good soil is the result of a sustained practice, a practice that is social as much as biological” (2012: 4). In line with a posthuman(ist) understanding, Pentecost also emphasizes the importance of the relation as the smallest unit of analysis (cf. Haraway, 2003; Barad, 2003) with regard to seeds and soil, i.e. to reproduce itself the seed has to engage with soil. Besides, the artist highlights the *living* quality of the soil. Pentecost sees soil as transgressing the organic/inorganic boundary; soil is already always a complex symbiotic mixture of minerals and different species (Pentecost, 2012: 5). Composting soil is in the process of becoming.

As mentioned before, Pentecost inquires into the possibilities of an alternative system of value that would be equally distributed and accessible to all. *Soil-erg* would be an alternative value system based on composting living soil instead of money; everyone can make this form currency by composting. Pentecost wants to replace the monetary currencies because they are an *abstraction* of value. Because money circulates ‘freely’ its value becomes decontextualized from the production process and those ‘human’ and ‘nonhuman’ agents involved. (2012: 7). Pentecost elaborates on her proposal:

“[m]ade of soil and work, the soil-erg both is and is not an abstraction. Symbolically, it refers to a field of value, but that value is of a special nature: soil must be produced and maintained in a context. It is completely impractical to circulate it. It is heavy, and, because of the loose structure required of good soil, it falls apart. It only makes sense when located in a place [...] If currency as we know it is the ultimate deterritorialization, the soil-erg’s value is inherently territorialized” (2012: 7).

Such a context-dependent value system would in fact overcome the abstraction that representationalism generates via the separation between value and production (cf. Barad, 2003). The ‘currency’ soil-erg cannot leave the location of its production without losing its value; it literally deteriorates. Soil-erg emphasizes context, locality

and the relations that are required for production and the maintenance of its value. Pentecost acknowledges the capacity of matter, the *living* quality of soil, and the many ‘human’ and ‘nonhuman’ agents that play an active role in its making. The artist compels the specta(c)tor to (re)think both definition and value of soil. Pentecost propagates the performative role of soil and inviting the specta(c)tor to tap into this resource differently and responsibly – through the active process of composting. Instead of focusing on financial profit, the implementation of the soil-erg as a system of value would acknowledge the being part *of* the symbiotic relations that make up a life-sustaining soil.

Raising “Honey as well as Questions”³⁶

Symbiotic relations are also vital to the work of the French beekeeper Olivier Darné. He, too, proposes an alternative system of value as a critique to capitalism and its socio-ecological ramifications. The decline in the European (and global) population of honeybees inspired Darné to base his system of value on the production of honey. Honeybee populations are said to be declining due to the increasing use of chemicals in agriculture as well as the global rise of monocultures and its ensuing decrease in plant diversity (Michael McCarthy, 2011).

Darné’s alternative system of value consists of site-specific urban interventions. Established first in March 2009, *Le Banque du Miel*, or in English *The Honey Bank*, has since been an ongoing endeavor. The installations are of a minimal design: black and shaped like a simple building housing a beehive. *Le Banque du Miel* wants to show the connections between the financial and ecological crises. For instance, *Le Banque du Miel* has been installed in front of the stock market in Paris as an explicit stance against the financial crisis. On one site of the installation it read: “LA BOURSE OU LA VIE?”³⁷

We rely more and more on chemicals such as pesticides and fertilizers in agriculture that paradoxically negatively affects the key players. Honeybees alone are responsible for the pollination of 70% of the edible crops (McCarthy, 2011). Because they are vital key players in food production Darné wants to expose their significant otherness (cf. Haraway, 2003). With a minimum investment of ten euros the specta(c)tor can open a ‘bee savings account’. The money invested in these accounts

³⁶ Olivier Darné quoted in Kate Deimling 2010.

³⁷ Translation: “THE STOCK MARKET OR LIFE?”

will not only realize the project but will invest in the production of honey. Also a social intervention, *Le Banque du Miel* is a place of gathering that allows specta(c)tors “to produce wealth and collectivity instead of money and loneliness and has demonstrated that time can be something other than money: TIME IS HONEY!” (Darné quoted in Kate Deimling, 2010). The total harvest of *miel béton* (concrete honey) is to be divided amongst the accountholders.

Darné is offering an alternative form of currency; he is redefining the concept of wealth. Like *Soil-erg* this system of value wants to undo the representational abstraction between value and production. Richness for Darné is not expressed in money but in the actual process of relating, of coming together to produce ‘life’, and in the diversity of species that is required for such production. Wealth is thus not a ‘thing’ to possess but rather a phenomenon of productive intra-acting (cf. Barad, 2003). With *Le Banque du Miel* Darné creates novel urban contact zones. These urban contact zones highlight the idea of cross-pollination, especially the infinite cross-pollinations between ‘human’ and ‘nonhuman’ players that make possible not only daily urban life but all ‘life’.

Le Banque du Miel is a socio-ecological intervention that creates both a metaphorical as well as a physical space of pollination. *Le Banque du Miel* constructs a local space of gathering where the ‘human’ and ‘nonhuman’ players come together and where people are compelled to think about social and environmental issues. This project enables new local new communities to form. The specta(c)tor is able to engage with her/his direct environment to challenge a global phenomenon. In these local communities companion species are brought together. Honeybees as key pollinators are significant others to human beings. Without these significant pollinators life for humans, who heavily depend on agriculture would not be possible. The main aim of *Le Banque du Miel* is not the production of ‘concrete honey’ it is rather the production of living together and ‘life’. Through investment in *Le Banque du Miel* the specta(c)tor is playfully yet critically being reconnected with an ancient companion species.

Besides, what Darné does is that he takes this ancient traditional relationship between honeybee and human, between pollinator and farmer traditionally set in a pastoral scene, and transposes it into a modern urban context where honeybees meet citizens and vice versa. So the artist is not only critiquing but also looking out for new affirmative alliances. Darné does not nostalgically linger in the past. However, he is

transforming the traditional concept to fit the present context. He introduces the bees to the city. The living potentials of the city, as a new type of upcoming modern habitat, should be explored more. Companion species are able to adapt. The honeybees become a sort of cartographers of urban spaces. Their *miel béton* is like “the concentration of geographies and histories of a city put into a jar. This rich and complex urban nectar is the image of the extraordinary mobility of people” (Darné quoted in Sophie Delon, n.d.). The vast diversity of flowering plants in the city benefits the population of honeybees. Also, the honey they produce is of good (if not excellent) quality due to that rich urban biodiversity. Everyone who holds a bee savings account receives part of the produced honey. In case of *Le Banque du Miel* the specta(c)tor invests and engages in a relationship that is fruitful for both ‘human’ and ‘nonhuman’ agents.

Seeds, soil and honeybees. These topics and artworks speak to each other as well. Our companion species and their significant otherness are being made explicit and these contemporary artworks should be read as invitations as well as interventions to (re)think what it means to live as companion species. They invite us in their search for expected and unexpected contact zones to not just be viewers, but to engage and become specta(c)tors. They bring forth the vulnerability of, for instance, the seeds and the honeybees. Besides, seeds, soil and honeybees engage in their own nonhuman-nonhuman companion species intra-actions. These works should be read as kinship claims that call for accountability. These four artworks provide an entry into the discourse on biopiracy/biocolonialism by raising awareness, setting up the parameters for discussion, and providing productive and affirmative alternative posthuman(ist) understandings of certain concepts such as soil. These artists are trying to make the specta(c)tor experience the interconnectedness. Doujak by recounting more than sixty connected case studies from all over the world. Kanwar by setting up a close encounter between the seeds and the specta(c)tor. Pentecost by reconceptualizing soil and the meaning of value. Darné also by redefining the meaning of value and creating local communities in which the specta(c)tor and honeybees come together.

These artworks are productive results of theory put in practice – showing and letting experience a sense of multispecies interconnectedness.

CONCLUSION

As an inquiry into productive strategies of resistance against the colonization of ‘life’, I have, throughout this thesis, engaged with the distinct yet entangled fields of technoscience, gender studies and contemporary art. Based on Rosi Braidotti’s statement that “‘we’ are in *this* together” (original emphasis. 2006b: 36) I have motivated my search towards a framework of new ontologies of becoming in which I have defined ‘we’ and ‘this’. In the first chapter I have contextualized the specific ‘this’ in which ‘we’ are together today by setting apart the genealogical history of biopiracy/biocolonialism. In the following chapter I have reconceptualized the ‘we’ that we usually understand in an anthropocentric manner from a posthuman(ist) perspective and brought to the fore that ‘we’ (‘humans’ and ‘nonhumans’) live in a multispecies existence. In the final chapter I then turned towards contemporary art in order to show how this field creatively and affirmatively contributes to a thinking and understanding differently that I argued for throughout and thus shows us via art the multispecies interconnectedness.

My leading motivation for this thesis was to search for constructive forms of resistance against biopiracy/biocolonialism, which I have shown to be a global phenomenon that exploits biodiversities and their related indigenous systems of knowledge, resting on the marriage between the history of colonization and Western modern science. Biopiracy/biocolonialism, however, is not an entirely new phenomenon but is based on certain scientific paradigms (Vandana Shiva, 1997; 2001) and historical power relations with regard to the justifications of ownership (Laurelyn Whitt, 2009). In order to critically engage with it I therefore explored the distinct genealogies of Western science and colonization and how they met to actualize the colonization of ‘life’. Biopiracy/biocolonialism relies on a mechanistic and reductionist paradigm, which was implemented as the dominant Western take on nature during the scientific revolution (Carolyn Merchant, 1980). Before that an organismic worldview was prevalent. Mechanistic reductionism, I have set apart, rationalized human domination of nature for human benefit, progress and capitalist profit. Thereby installing a hierarchically centered anthropocentrism in which the primacy of interconnectedness has disappeared.

At the same time the West and the rest of the world experienced a long history of colonization, which was thought to have ended mid twentieth century. My argument, however, is that colonization is still happening today in the form of biopiracy/biocolonialism. The original justifications on which colonization was based have not changed much within this contemporary version. It rather is a continuation of the same. According to the mechanist paradigm, biopiracy/biocolonialism still foregrounds that nature is intrinsically valueless. Declaring nature's biodiversity to be Bio-Nullius (Shiva, 2001) gives scientists the right to manipulate it and subsequently patent it, i.e. to own 'life'. Likewise, local life-sustaining biodiversities and their related indigenous systems of knowledge are claimed to be commons within the public domain (Whitt, 2009). This argument has a twofold way of doing injustice. First, it claims that that which belongs to everyone actually belongs to no one and can therefore be privatized, i.e. the commons no longer freely accessible become enclosed. Secondly, declaring biodiversity and indigenous knowledge to be (passive) commons undermines the fact that both have come forth from the active reciprocal and intelligent relations between 'human' and 'nonhuman' players over millennia.

Nonetheless, biopiracy/biocolonialism could not have been realized without certain biotechnological innovations. I have reasoned how the development of molecular visualization techniques has resulted in the conceptualization of 'life itself' as a space and reprogrammable code (Sarah Franklin, 2000). The molecular imaging of 'life itself' as a four letter code has led to the creation of novel interior spaces that are vulnerable to colonization and capitalization. Moreover, the subsequent developments leading to genetic engineering made it possible to alter the genetic code, i.e. to mix Bio-Nullius with human labor to produce a market commodity with financial value. The emergence of these novel and reprogrammable genetic territories has enabled the contemporary issue of biopiracy/biocolonialism to arise.

The genealogical exploration into biopiracy/biocolonialism has, however, provided several entries for critical and productive resistance. Opposing biopiracy/biocolonialism requires a deconstruction of the underlying mechanistic and reductionist paradigm, which approaches biodiversity as the 'raw' resource for exploitation. In want of stressing the interconnectedness of the 'we' who are involved in and inflicted by the issue of biopiracy/biocolonialism from a less anthropocentric perspective and to include as many 'human' and 'nonhuman' agents into the conversation as possible I addressed biodiversity from a posthuman(ist) perspective. I

have argued that to read together a posthuman(ist) reconceptualization of matter as active, species and ‘life’ as constituents to biodiversities would enable a less anthropocentric and more inclusive understanding of the world in which ‘we’ as multispecies are together.

With the use of Karen Barad (2003) I have argued that matter is a form of active posthuman performativity. This perspective is diametrically opposed to the current paradigm that sees matter as inert and passive and in need of human (male) external input. Moreover, in this part I supported the idea that the relation is the smallest unit of analysis by arguing that nothing preexists their relatings. There are no reducible static ‘things’ with inherent properties, there are only phenomena that happen in the making of ‘spacetime’; phenomena are temporalities – ongoing reconfigurations that are *always becoming*. Next I used Donna Haraway’s notion of companion species (2003) together with Lynn Margulis’ theory on (endo)symbiotic co-evolution (Lynn Margulis and Dorian Sagan, 2007) to explore the interconnectedness of ‘we’ and to define the ‘we’ as all ‘human’ and ‘nonhuman’ bodies within a local biodiversity. The notion of companion species relies on symbiotic networking – co-living. For Haraway, too, the relation is the smallest unit of analysis. Moreover, companion species refer to significant otherness meaning that species need each other and diversity to survive. Significant otherness thus implies that ‘we’ need to act in a reciprocal and accountable manner within this multispecies existence.

Because of its reduction to ‘life itself’ and as an integral part of biodiversity ‘life’, too, necessitates a posthuman(ist) revision. Rosi Braidotti suggests that ‘life’ should be considered a multiplicity consisting out of two, namely: *bios/zoe* (2006a; 2010). *Bios* is the discursive half of ‘life’ whereas *zoe* is that unexpected force beyond ‘human’ control. *Zoe* is open-ended and the driving force – always becoming. The posthuman(ist) understanding of matter, species and ‘life’ read together as constituents of life-sustaining biodiversities challenges the idea that biodiversity is a passive ‘raw’ resource for exploitation. Rather than being ‘things’ biodiversities are phenomena that carry a posthuman(ist) embodied intelligence, which depends on the creative experimentation of a multispecies symbiotic network. A posthuman(ist) embodied intelligence exists in species intra-actions resulting in the diversification of ‘life’. Human logic is not capable to reduce the infinite complexity of biodiversity’s posthuman(ist) embodied intelligence.

Then in the final chapter I turned to contemporary art in order to show how this field creatively and affirmatively contributes to a thinking and understanding differently that I argued for throughout. Contemporary art could mediate an understanding of multispecies interconnectedness. Most contemporary artists transgress fixed boundaries therefore able to show the causal infrastructure of phenomena. Their works are often projects, or interventions that are never finished. These contemporary artworks provide a nexus of discursive and nondiscursive practices as a point of departure for critical engagement – for ‘other’ conversations.

I have argued for the active role contemporary art today could play towards new ontologies of becoming. The four artworks that were presented here appeal to an art of inquiry. These works are not a descriptive representation of ‘reality’; they rather compel the art viewer to take part of the work. I have suggested that contemporary art calls for active specta(c)tors that are being invited to (re)think their role and their relations to the issue of biopiracy/biocolonialism. The artists Ines Doujak, Amar Kanwar, Claire Pentecost and Olivier Darné draw the specta(c)tor right into the middle of their interventions. These installations appeal to multiple senses and to an embodied experience via their unusual haptic materiality (soil, earth, seeds, bees). They raised awareness and provided potential working alternatives of resistance based on a posthuman(ist) framework. These four installations of inquisitive contemporary art open the specta(c)tors eyes to a multispecies existence, a seeing again (Haraway, 2009), and provide grappling hooks to start deconstructing our reductionist and anthropocentric worldview, which lies at the heart of biopiracy/biocolonialism.

Acknowledging a multispecies existence, however, is not at all a call for a utopian world. Haraway states that “[t]he relationship is not especially nice; it is full of waste, cruelty, indifference, ignorance, and loss, as well as of joy, invention, labor, intelligence, and play” (2003: 12). A posthuman(ist) understanding of a multispecies existence would challenge the highly anthropocentric foundations on which biopiracy/biocolonialism rests. It is about finding a more symmetrical and accountable balance in which ‘we’ emphasize the relations within ‘this’.

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