Encountering the Vegetal-being:
An Inquiry Through Contemporary (Bio)Art

Janis Rafa, *This Thin Crust of Earth,* HD, stereo sound, 12min, 2016.

Melissa Maria Lindqvist

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Melissa Maria Lindqvist
s1627635
melissalindqvist@outlook.com
MA Arts and Culture: Art of the Contemporary World and World Art Studies
First Reader: Prof. Dr. R. Zwijnenberg
Second Reader: Dr. A. Kallergi
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Table of contents

Introduction

"The world is not the world as manifest to humans; to think a reality beyond our thinking is not nonsense, but obligatory."[1] – Graham Harman.

Vegetal-beings are the most abundant form of 'nonhuman' entities that humans encounter, more abundant than nonhuman animals, microbes and fungi, yet it is commonplace to exclude the vegetal from our system and emphasize the discontinuities between 'us' and 'them'. Therefore, within the context of this research paper, to talk about experiencing, engaging with, or even meeting the vegetal is to talk about an *encounter*. It cannot be a simple engagement due to the complex experience involved, a proportion of difficulty in understanding and relating between species, and intrigue in the face of this otherness, of plant life. Underscoring this research is the move away from thinking about plants as simple and passive entities, who possess a lesser status than 'humans' on this earth. Indeed, the urgency for further research into this also stems from the on-going ecological problems and ever increasing global interconnectedness that call for a re-configuring of 'relations' between humans and nonhumans. In other words, an acceptance or solidarity with alternate modes of being on this earth, which calls for a reassessment of both the concept of nature and ecological awareness itself.

Contemporary philosopher Timothy Morton points out that we must distance ourselves from the concept of 'nature' altogether, as 'nature' as a concept is both trying to be the very essence and substance of living beings simultaneously.[2] In fact, to come to a level of non-anthropocentric understanding of the vegetal, regarding a term such as nature and using it as a substitute for 'plants', both brings forth the differences between plants and other species but also immediately deletes these differences: 'It is the trees and the wood – and the very *idea* of trees.'[3] On-going ecological problems and ever increasing global interconnectedness call for a re-configuring of 'relations' between

[1] G. Harman, "On the Undermining of Objects: Grant, Bruno and Radical Philosophy", *The Speculative Turn: Continental Materialism and Realism*. Ed. by L. Bryant, N. Srnicek and G. Harman (Victoria: re.press, 2011), pp. 21-40, p. 26.
[2] T. Morton, *Ecology without Nature: Rethinking Environmental Aesthetics* (Cambridge: Harvard University Press, 2007), p. 18.
[3] Ibid.

humans and nonhumans, and also a reassessment of the term 'nature'.[4] We should instead regard ourselves to be in co-existence with all living beings on earth, existing in a community. Exploration into how contemporary (bio) artists (bio in parentheses as both contemporary non-bio and bio artists are taken as case studies) are engaging with and perceiving plant-life from a post-anthropocentric perspective to guide humans in their encounter with plants in an alternative way are integral aspects of this research.

The artworks discussed, involving plants and technology or scientific implementation, explore how these scientific methods help to reveal the intrinsic expressions and responses of plants and question what the role of technology is in this revealing process. Thus, bringing what usually seems inaccessible to 'humans' into our frame of reference, in effect attempting to liberate us from the aforementioned anthropocentric, 'traditional' relations between humans and plants. This research asks: to what extent does the engagement of contemporary (bio) artists' with the vegetal help us to encounter them (plants) in an alternative way and do these artists try to engage and encounter the vegetal from a non-anthropocentric perspective, in a way that is not merely exploitative? Art is paramount in this investigation because it allows us to actually experience, feel and perform or visualise these alterities of being, these 'nonhumans'. Through art we can also experience how to engage with plants non-anthropocentrically, explore the unique place of their being and can attempt to avoid the instrumentalisation role that we too often assign to them. This experience is something that cannot be done through theoretical imagination alone.

It seems to be a human characteristic to overlook the plant-life that surrounds us; we may respect them for their generous resourcefulness (renewable resources) and beauty that contribute to human well-being, yet plants too often form merely an inconspicuous backdrop. In recent years however, arguably due to the accelerated progression of the life-sciences and the deterioration of the view that humans hold the dominant central position, we have also come to scientifically and philosophically understand that these vegetal beings are interlinked in significantly complex, multispecies communities operating on time scales way beyond and imperceptible to our human senses and

[4] "nature© by Aleppo @ Parckdesign2016 - Timothy Morton", *YouTube*, uploaded by Parckdesign 2016, 21 September 2016. http://youtube.com/watch?v=l53WjrmvWxM. (20 December 2016).

capacities. Post-anthropocentric conceptions of plant-life have also increased considerably, reinforcing yet more questioning, shifting of thoughts and awareness of these important beings with which we co-inhabit the (eco)system. How can art help us to question what plants actually are and how we can co-inhabit the earth with them? I argue that contemporary art can be seen as a kind of portal that opens up to us this other realm of vegetal-being, which can allow us to make the connections between nonhumans and humans become more explicit.

Due to this explosion of 'new realities and new phenomena', it is not sufficient to rely purely on metaphysical philosophical thinking to advance from our current state.[5] Thus, new thinking or contemplating new mind-sets (moving away from traditional philosophy) that fit in with the age of new media and rapid advancement in technology is required particularly when we want to value other living beings besides humans. These 'new mind-sets' are what form the theoretical preoccupations of this research. I take the perspective of Michael Marder as part of my theoretical framework, on the reasoning that he forms an alternative post-metaphysical perspective of plant-life, acknowledging the need to alter the traditional understanding of these beings, through rebasing human thought by taking vegetal ontology into consideration. Marder's writings build a base for discussion on this subject. Another aspect at the centre of this research is new materialism (coined by Braidotti and DeLanda), which allows for a re-mapping of the seemingly complicated relations between 'nature' and 'culture'. This perspective helps to establish knowledge about nonhumans as significant, in other words, 'what are the conditions of existence for our knowledge and theories of the nonhuman – and secondly, that the nonhuman is not reducible to our knowledge of it.'[6] Object-oriented ontology also follows this posthuman mind set, and for this investigation these approaches are significant. For instance, object-oriented ontology encourages the exploration of the multiplicity of nonhuman perspectives and also can allow us to envision what the world

[5] A. Schapiro. "Conversation about Gianna Maria Gatti's The Technological Herbarium", *NOEMA Technology & Society,* 26 September 2010, http://noemalab.eu/ideas/interview/conversation-about-gianna-maria-gatti%E2%80%99s-the-technological-herbarium/. (27 June 2016).
[6] "New Materialism and Nonhumanisation: An Interview with Jussi Parikka by Michael Dieter," *V2: Lab for the Unstable Media,* 2012. http://v2.nl/archive/articles/new-materialism-and-non-200bhumanisation. (27 June 2016).

might appear like to vegetal-beings in order to encounter them, to say the least (what the scope of this paper allows for). [7]

The three chapters within this thesis discuss the above from various angles through different contemporary artworks involving live plants. Chapter 1, 'Towards A Vegetal Encounter', investigates how we can encounter plants through the work of contemporary bio-artist Špela Petrič, taking her work *Confronting Vegetal Otherness*: *Skotopoesis* (2015) as the main case study, which explicitly tries to find a communion between plant and human. During this vegetal encounter it is also appropriate to explore how we can approach the 'alien' other from a post-anthropocentric perspective and without anthropomorphising it. I discuss this through the perspectives of Michael Marder, (plant ethical specialist and philosopher) and Anthony Trewavas (professor of molecular biology and researcher in plant physiology) who both explore how to avoid the fetishisation and anthropomorphisation of vegetal beings. The issue surrounding plant/human communication is also explored within this chapter, proposing indeed that plants can (evident from both historical and current research) communicate through a specific language and respond, interpret and express themselves, albeit very differently to humans. Through the notion of 'vegetalization', surrendering to the different rhythm of plant-life, we are lead to the exploration of poetry through which I propose an alternative direction to take for a post-anthropocentric dialogue with the vegetal.

In Chapter 2, 'Eradicating the boundaries between the work of art and the work of nature', a new hybrid of art (but also plant) reveals itself. Art is significantly important in this quest for deeper encounters between the human and vegetal-being. The complex processes of vegetal-beings can be visualised and communicated through artworks and the unexpected combinations that might emerge. In other words, art can allow us to actually experience these processes, which cannot be done with just theory. This opens up whole new territories where changes in perspectives and attitudes towards plants can manifest themselves. The first part of this chapter deals with George Gessert's hybridised, genetically engineered flowers and explores the debate on technology's ability to enhance aesthetics but also looks at how Gessert's hybrid irises in particular are

[7] M. Kasprazak, "Interview with the Commissioned Artists", *V2_ Presents Blowup Reader #6: Speculative Realities,* 2012, p.16. http://v2.nl/archive/articles/new-materialism-and-non-200bhumanisation. (27 June 2016).

not only about beauty but also about, like the rest of this thesis, going beyond ourselves to learn more about and *from* vegetal-beings. The second part of this chapter is concerned with considering the issues that arise from exhibiting plant life within institutions such as museums and galleries, discussing this through various exhibitions of Gessert and Petrič's *Skotopoesis* performance. I also explore the ethics of exhibiting plants and question whether we can even come to an ethical understanding of these living beings without succumbing to anthropocentrism.

Chapter 3, 'Intangible Processes and the Imperceptible: Manipulation and Deconstruction of the vegetal-being' discusses the merging of technology and vegetal life, and also how technology can completely disrupt or deconstruct the vegetal landscape. The first part of the chapter explores the translation of the inner metabolic process of plants through technology, and how this translation is useful or reflective (if at all) of vegetal time and vegetal life itself. Celeste Boursier-Mougenot's *rêvolutions* (2015) is taken as the case study for the first part – the artwork involves trees fitted with electrodes and wheels, which respond to the trees' metabolisms and in turn the trees move locomotively through the space at a visible 'human' pace. The final part of the chapter studies the deconstruction of the vegetal-being and its landscape and how this affects our encounter. It is discussed through Janis Rafa's *This Thin Crust of Earth* (2016) and her, at first glance, violet uprooting and burial of a tree within its 'vegetal landscape'. What do we learn about the encounters or 'contracts' between humans and nonhumans? How does motion affect our encounter and collaboration with plants? I also argue that this artwork can direct us towards an attempt to avoid anthropocentric thought and projecting human values onto plants through the vegetal-being's non-representation, when the tree in this case is buried and removed from the visible landscape. This arguably releases it from the tightness of the anthropocentric system. I will discuss this through Braidotti's posthuman notion of death or 'becoming-imperceptible'.

This research endeavours, through the exploration of contemporary artworks involving, collaborating with and manipulating, at its most visceral completely deconstructing plant-life, to open up multiple spaces in which to re-imagine alternate 'relations' between humans and plants and instantiate new ways of being, behaving with or encountering each other from a post-anthropocentric perspective. In essence, re-

imagining, through the lens of the vegetal being, a different perspective of the world, a de-centring of the human. Indeed, what can we learn through the study of plant-life as deviating from the central position that we have learned to inhabit as humans? Through the encounters made explicit by the artists' strive towards showing the world 'otherwise' through the lens of the vegetal, does a non-human alterity emerge? Does technology enhance this alterity or hinder it? If we are to find such an alterity within this research project then plants can be argued to represent valid contributors to art projects, widening the breadth of contributors to contemporary art, providing an alternate perspective on the heterogeneous multiplicity of the living. Indeed, one of the oldest philosophical questions arises from this research: what even is a plant? This makes one consider to what extent contemporary art can help in this process and thus, what kind of plants are cultivated from these new practices.

1. Towards a Vegetal Encounter

An encounter between the vegetal being and the human has already been revealed as a complex process, but specifically at stake here is *why* there seems to be such difficulty on behalf of the human (at least) to reach any level of connectivity or relation with these most uncanny beings and can we even reach a stage where the difficulty is surpassed? In order to do this one must re-think everything, and indeed this becomes a deep ontological undertaking. This chapter lays down the foundation for the following chapters, the objective being to highlight where exactly the difficulties appear to lie and how cooperative encounters can emerge despite explicit differences between humans and plants, with the aid of post-anthropocentric and what Michael Marder calls 'phytocentric' thought. What unnerves humans about plant-life stems even from something as seemingly insignificant as the subtle movements and sounds of the vegetal, deterring us from attempting at any further engagement with them, in part due to what we perceive to be motionless passivity (plants are not inanimate things however), that they appear devoid of sensation and also that they are ontologically different to us. For instance, they live without psychic interiority. Michael Marder argues that what really overwhelms us, when looking through an anthropocentric lens, is this impersonal excess of plant-life, which transforms them into a fetishized mystery.[8] In other words, the existence of the plant as a 'noumenon' or the *thing-in-itself* that is independent of the mind. A pause for contemplation next to a tree or a shrubbery for instance can reveal that plants in fact appear distinctly active, but this activity emerges from the plethora of animal and insect life sheltering within and feeding from the vegetation.

Our human notion of plants as non-sensorial 'automata' is deeply entrenched in Aristotelian philosophy, which also seeks to view plant-life from a highly subjective perspective, deeming them to be passive things: "[…] for it appears that plants live, yet are not endowed with locomotion or perception."[9] To witness the sensorial processes and internal life of the vegetal being, actively perceiving, one would have to pause for an exceedingly long time (with regards to a human time scale – temporality is discussed

[8] M. Marder, "The Life of Plants and the Limits of Empathy", *Dialogue,* Vol.51, No.2, June 2012, pp. 259-273*,* p. 262.
[9] Aristotle, Trans. by J.A Smith, "On the Soul: Book I", 350 B.C.E, *The Internet Classics Archive*, 18 September 2009, http://classics.mit.edu/Aristotle/soul.1.i.html. (4 September 2016).

later in this paper) and even then this is near impossible without technological interventions, as they appear to be invisible.

In this chapter the artwork chosen does not manipulate plants through technological means, in the sense that technological apparatuses are omitted from interfering or merging with the plant-life, but instead the human is used to facilitate a response from the plants and thus a form of encounter is seen to emerge between human and plant. Indeed, to encounter the vegetal in this case one must be prepared to stand patiently alongside them; can we be with vegetal beings at all? Catalysed by this, further investigation into how one can avoid anthropocentric thought and indeed the fetishisation and anthropomorphisation of plant-life and thus also an attempt to shed light onto the complexities of communication between the human and the vegetal arises. Indeed, is it possible that in order to have a 'better' encounter with the vegetal, one should avoid these aspects and out of this is there potentiality for new types of connections to emerge through contemporary art?

1.1 Deviating From Anthropocentric Perspectives and Avoiding the Anthropomorphisation/Fetishisation of the Vegetal-Being

During this strive towards a vegetal encounter it is appropriate to explore how we can approach plant-life without falling to the dangerous pitfalls of anthropocentrism which instinctively also can lead one to anthropomorphisation and fetishisation. Both anthropomorphisation and fetishisation are terms commonly ascribed a negative status specifically in relation to plants or other nonhumans. The reason why I combine both concepts is due to the frailty of distinction between the two; both are more intertwined than one might expect. According to R. Belk in his essay 'Objectification and anthropomorphism of the self': "[...] animation of the focal object links fetishism to anthropomorphism."[10] Fetishisation assigns 'mystery' to the vegetal being, as explained earlier, while anthropomorphisation projects human characteristics onto the subject; these stem from the prevalent need to control and impose human constructs and expectations

[10] R. Belk, "Objectification and anthropomorphism of the self", *Brand Mascots: And Other Marketing Animals*. Ed. by S. Brown and S. Ponsonby-McCabe (Abingdon: Routledge 2014), pp. 19-34, p. 22.

onto other living organisms.[11] However, anthropomorphism is something readily applied in the above sense to nonhuman animals but when confronted with the vegetal, anthropomorphism can acquire an alternate role. Plants have been shackled to such descriptions as 'alien others', rather than possessing the capability of embodying 'human' expectation or behaviours, in other words, plants have been deemed alien to life (when approached from an anthropocentric or metaphysical perspective), considered so different to human life that they are given a lesser status as living beings. They have even been described as 'deficient things' or 'lifeless souls'.[12]

Indeed, it can be argued that because plants are seen to lack the metaphysical capability of distinguishing what is inside and outside of themselves, or in other words they lack psychic interiority, and that they are also not able to feel themselves feeling, (or do not possess feelings), they are regarded as incapable of suffering in comparison to sentient beings. Therefore, if a human is to project suffering onto a plant, for instance an unsurprisingly common belief is that cutting or picking flowers etc. inflicts pain, then arguably we are reflecting *human* empathy and emotions onto the plant which leads back to the human empathising with his/herself, not with the plant.[13] Michael Marder stresses that, "the feeling of empathy with plants disregards their mode of being and projects the constructs and expectations of the human empathizer onto the object of empathy."[14] This attitude eliminates our need to empathise with the plant, for empathy does not exist in their world thus, one cannot identify with the other through the means of anthropomorphic empathy projections. Despite this announcement, plants respond to stress signals from their environment, which produce biochemical fluctuations and changes at a cellular level.[15] Therefore, the vegetal capacity to suffer cannot be completely eliminated, and one must bear in mind that suffering, or even empathy, in plants manifests itself in a form or on a sensory level incomprehensible to humans, at least not yet. These are but a few reasonings that can contribute to this anti-anthropomorphic argument.

[11] A. Trewavas, *Plant Behaviour and Intelligence* (Oxford: Oxford University Press, 2014), p. 14.
[12] Marder, "The Life of Plants and the Limits of Empathy", p. 263.
[13] Ibid. p. 263.
[14] Ibid. p. 261.
[15] M. Gagliano and M. Grimonprez, "Breaking the Silence – Language and the Making of Meaning in Plants", *Ecopsychology,* Vol.7, No. 3. September 2015, pp. 145-152.

On the other hand, this discussion surrounding anthropomorphism can also be seen from a different perspective. For instance, assigning human behaviours such as visible movement (e.g. flying, running) to plants, or claiming that plants react to music or indeed themselves possess a voice or speech similar to humans, is problematic as it robs the potential for a richer encounter or understanding between human and plant and degrades vegetal specific 'behaviours'. It also crudely indicates that we have come to accept that their sensory-inputs are comparable to ours, resulting in misconceptions that vegetal perceptions of the world are similar to human perceptions. The issues arising from communication and plants, is addressed more in-depth in chapter 1.2.

As we find that empathising with the vegetal-being appears to be unviable, how can we begin to be with them or experience their modes of being? Contemporary bio-artist Špela Petrič recognises that avoiding the anthropomorphisation of vegetal-beings is one of many important concepts to investigate. Petrič put this into action in her performance piece *Confronting Vegetal Otherness: Skotopoesis,* at the Kapelica Gallery, Ljubljana, Slovenia in 2015, during which she tried to identify where the boundaries for compatibility, empathy and 'intercognition' (a useful term coined by Petrič which can be understood, in short, as reciprocal perception) between the human and the vegetal lie. [16] During this 'confrontation' a light was projected onto a patch of germinating cress, which she then obstructed with her own shadow (Fig. 1), standing for an extended period over two days, 12 hours on the first day, with hourly short breaks, followed by a night's sleep and the remaining 7 hours on the second day. The title *Skotopoesis* literally means 'shaped by darkness'. [17] The performance resulted in the etiolation of the plants in the form of her shadow (Fig. 2). [18] This confrontational process was stressful and physically demanding for both the cress and the human; the cress went through the process of etiolation and the height of the artist decreased with time as she lost intervertebral fluid during the standing process.[19] On the subject of etiolation, how does the fact that the plant reacted visibly as a result of a human feat affect our perception of vegetal beings?

[16] Š. Petrič, "The Conundrum of Plant Life", *Leonardo,* Vol. 49, No. 3. June 2016. pp. 268-269.
[17] Petrič, "The Conundrum of Plant Life", p. 268.
[18] Etiolation: growth of plants in partially or completely obscured light, distinguished by their growth of long and weak stems, usually of a pale yellow colour.
[19] Petrič, "The Conundrum of Plant Life", p. 268.

To what extent as a result of the artwork do we find ourselves increasingly considering that plants might possess a particular type of subjectivity or awareness?

It can be argued that Petrič encountered the cress in a reciprocative event, the human trying to put her animality aside and the plant facing the shadow of the human, an attempted understanding of the plant due to this human surrender. Petrič wants to understand plants on their own terms and she pointed out that: "The 19-hour commitment to active inactivity was my way of surrendering to the plant".[20] The animality of the human is put aside in the face of the other to which one is both incomparable and comparable. She states that this process indeed resulted in an intercognition between plant and human, in other words, a process during which both exchange physicochemical signals resulting in a disturbance of each other's states; the objective result was seen in the physical observable changes that occurred in the plant and the human.[21] However, there is something to be said for this speculation that the human makes on behalf of the plant. Marder stresses that the human's sentient existence is a major obstacle in the face of relating to plant-life.[22] As mentioned above, Petrič wants to understand plants on their own terms yet the plant may be completely indifferent to the presence of the human, the plant arguably merely reacting to a biological or chemical trigger, the obstruction of light (it could make no difference if the shadow was formed by a rock or a human) resulting in its etiolation during this biological process. How then is this performative artwork really a way in which to achieve a richer encounter with plants and specifically how is it an anti-anthropomorphic one? It is certainly an encounter but is it an encounter purely from human to plant or is the plant also encountering the human? The latter is a question one can only make speculations upon, but speculations nonetheless are important when trying to allow the alterity of plant-life to emerge and encounter us. For Heidegger, an 'uprooting' or closure of metaphysics allows us to stand face-to-face with other beings, which allows us to view the world as it stands, "[…] The tree faces us. The tree and we meet one another… As we are in relation of one to the other and before the other, the tree

[20] Ibid. p. 269.
[21] Š. Petrič, "Confronting Vegetal Otherness: Skotopoesis", *Špela Petrič,* 2015. http://spelapetric.org/portfolio/skotopoiesis/. (19 August 2016).
[22] Marder, "The Life of Plants and the Limits of Empathy", p. 263.

and we *are*."[23] Through Heidegger's analogy we might begin to believe that we are able to encounter the tree (in this case we discuss the *tree* as the patch of germinating cress) without any extraneous interferences. However, Marder stresses that to describe a meeting between the human and the vegetal as a 'face-to-face' encounter adds an anthropomorphic aspect (that which here we are trying to depart from), an extraneous interference; indeed, the tree does not have a 'face' as we know it, nor any plant for that matter. [24] Thus, when Petrič speaks of 'confronting otherness' this could be seen as a process of facing the vegetal, as confrontation usually occurs in a 'face-to-face' approach. Arguably then, the cress within Petrič's performance can be seen to escape from our spectrum and therefore, is she/are we really confronting any being at all? The notion of *confronting* the other has to be re-configured, as we need to perceive a completely new form of being-with the plant in order for it to not escape.

Indeed, we can acknowledge that we are set apart from plants and this is largely in part related to our 'asynchronicity' to their lives, our time-scales diverge enormously, as well as the way in which we access the world:

> "[…] just as we are convinced that we have finally met them, they are no longer (or not yet) there, since we have neither the patience nor the capacity to linger with them, to accompany their development and growth."[25]

Petrič attempted to linger and accompany the patch of cress although admittedly on a modest and restricted scale, she wanted to respect the foreignness of the vegetal. But, consider if the cress were an oak-tree, or something much larger than our form, what would the artist have to do in order to disturb the state in a reciprocal act, to cause a physical reaction from the tree for our shadow would not be enough? Another issue is that Petrič can to some extent be seen to embody the traditional notion of the 'human form' as creator. She determines through her shadow for instance the course the artwork will take as etiolation is certainly a determinable biological reaction that the cress, or other plants for that matter, will have. It can therefore be argued that she does not account for the 'freedom' of the plants in the way that the outcome of the artwork is already in some ways predetermined. Our asynchronicity is also not the only issue that is separating

[23] M. Marder, "Of Plants, and Other Secrets", *Societies,* Vol. 3, 2013, pp. 16-23, p. 19.
[24] Ibid. p. 19.
[25] Ibid. p. 20.

us further from vegetal beings. Arguably, the more humans try to override the vastly different lives of plants and form a communion with them, is precisely when more barriers form between our different vegetal and human centred worlds.[26] For instance, Petrič did indeed establish that we are both incomparable and comparable with the vegetal being but, is it enough to perceive these (in)comparabilities and suggest that *intercognition* forces are at work between the plant and human when a *communion* was still sought by the artist? This could be viewed as pushing the human further away from the vegetal and vice versa. Petrič also pointed out that a certain degree of 'vegetalization' is required on behalf of the human to reach this intercognition.[27] In her performance, this act of vegetalization was her attempt at standing outwardly 'still', trying to be with the plants at their time-scale, on their terms. Again one can argue that we have entered a problematic area, for instance Marder states that when the human puts herself/himself in the place of the other, it points not to an attempted 'empathetic relation' with the vegetal but rather to, "Deleuze and Guattari's "becoming-plant," as a step in the series of molecular becomings breaking down the identity of the subject to the point of "becoming-inorganic" [...]"[28] But, perhaps this different mode of 'becoming' is from an outmoded philosophical approach and that is why I argue that *vegetalization* can indeed be a significant direction to take when searching for different ways for contemporary art to reveal new alterities of plant-life or even new territories to explore.

However, one factor is bothersome. By having the urge to relate the plant to the human are we not reducing the plant to fit in with human viewers of the artwork? This goes against the notions of object-oriented ontology (OOO), a posthumanist view that regards all 'things' animate/inanimate/human/nonhuman to be objects, in other words "unified realities—physical or otherwise—that cannot be reduced either downwards to their pieces or upwards to their effects."[29] These objects are withdrawn from our human understanding, reaching beyond our access. It is an important ontological approach to consider in terms of revealing the multiplicity of being that inhabits this earth, which can in turn help further the encounter with vegetal alterity. Still, with this in mind, the

[26] Ibid. p.20.
[27] Petrič, "Confronting Vegetal Otherness".
[28] Marder, "The Life of Plants and the Limits of Empathy", p.266
[29] G. Harman, "Graham Harman: Art Without Relations", *Art Review*. http://artreview.com/features/september_2014_graham_harman_relations/, (19 August 2016).

problem that arises from *Skotopoesis* is that Petrič wanted to establish a type of intercognition between plants and humans. OOO recognises that this world of dynamic relations, circulates around human needs and goals, therefore arguably Petrič's work could be seen as yet another human trying to reach a goal, the goal being to reach intercognition or learn to be with plants as humans. This is where a paradox also reveals itself. Artworks that can be considered in terms of OOO have a drive towards presenting how objects exist or live outside of human access or perception. Petrič points out how plants exist or react to the human beyond our perception, she even attempted to vegetalize herself, standing still, confronting the cress. In fact does it matter if either were becoming each other but, speculatively speaking, were forming a new terrain from which to become something else together, a different thing altogether. These are difficult questions to answer but are interesting to consider within this debate. OOO certainly defends the recognition of exclusive or separate lives beyond our human reach, at this conception Petrič's work is at its strongest as a vegetal encounter as she tries to both reach and go beyond these unreachable realms.

However, being unconvinced as to whether plants and humans are capable of a successful encounter due to the complexities discussed still raises its confabulating head, as one must enter a post-anthropocentric state of mind, which takes some practice if one ever manages to successfully enter it. Acknowledging the vegetal being does not have to coincide with a human capability to see something familiar in the vegetal, something which Petrič accepts in her performance; the cress and her are nothing alike yet there is scope to consider that they encounter each other and reach a level where the artist believes an exchange occurs, a surrendering moment. Marder also points out that, "while we do not recognise ourselves in plants, we register something of the plants in us, so that the failure of recognition, not to speak of self-recognition, becomes productive of an ethical relation to vegetal life."[30] It becomes apparent that we must re-consider our ethical relations towards plants, in the manner that we must avoid seeing them as reflections of ourselves for this disfigures our encounter with plants and also other nonhuman beings. The difficulty in encountering the vegetal-being or engaging with it in anyway, mainly lies in the difficulty to push the boundaries between species. What might be helpful here

[30] Marder, "The Life of Plants and the Limits of Empathy", p. 265.

is to consider de-centring ourselves and abstaining from projecting human values onto nonhuman beings, as discussed through the avoidance of anthropomorphisation and fetishisation for instance. Perhaps we can take the notion of *vegetalization* of the human-self further and with this begin to find the gaps in between the communication barriers that hinder us from forming meaningful encounters with the vegetal.

1.2 Reconfiguring Communication and Finding a Vegetal Rhythm

Proposing that plants can, evident from both historical and current research, communicate and respond, interpret and express themselves, albeit very differently to humans (but not necessarily any less meaningfully), it is interesting to investigate this from outside the conventions of anthropocentric thought. Communication is a mode of behaviour often assigned to humans and nonhuman animal species; we might argue that behaviour itself is a specifically anthropocentric term that has difficulty in translation to plants in particular. However, biologists Humberto R. Maturana and Francisco J. Varela recognise behaviour in plants, even though behaviour is something *usually* associated with movement and animals with a central nervous system:

> "Behaviour is not an invention of the nervous system. It is proper to any unity seen in an environment where the unity specifies a realm of perturbations and maintains its organization owing to the changes of state that these perturbations trigger in it."[31]

Therefore, it can be said that the inherent slowness of vegetal-beings inhibits us from seeing the actual 'movement' that takes place and as a result we only see it as a change in form, which subsequently removes the idea for us that plants possess the capability to 'behave'. In *Skotopoesis,* the cress reveal to us their 'behaviour' through changes in their form, through the final visually and biologically apparent result, at the end of Petrič's performance, of their etiolation, even though one could not observe these movements and processes in 'real-time'.

[31] H. R. Maturana and F. J. Varela, *The Tree of Knowledge: The Biological Roots of Human Understanding.* Trans. by Robert Paolucci. Revised edition (Boston: Shambhala Publications Inc., 1987), pp. 142-145.

If we consider the term communication in relation to the human, it encapsulates a myriad of aspects for instance, body language (nonverbal), speech (verbal) and scent (olfactory). However, now we have come to understand that plants are also highly sensorial and communicative cognitive entities, we might be able to begin to bridge our human subjectivity and the interiority of the vegetal being through communicative interactions. During the process of this research one can attempt to find out whether communication (and also specifically language) forms a necessary part of the encounter between humans and plants or if it is in a state somewhere beyond this, in ways that might never be explicit. From this, emerged the idea of meditating on a vegetal rhythm of existence similar to Petrič in *Skotopoesis,* in the sense that she surrenders herself to the vegetal pace of existence. This can clear a way for learning a new form of communication altogether, from plants; we must 'unlearn' all the certainty and normative processes to which we have become accustomed and through this, alternate notions of nonhuman/human communication can emerge.[32] Do plants possess a form of language of their own? What could this mean for our encounter with them, and how does this communication resonate through contemporary art involving plants?

The term 'plant communication' has been highly criticised by scientists for its inherent anthropocentrism. In the social sciences and biology for instance, this unique form of communication or interaction is instead generally considered under the terms "people plant relationship" (the inclusion of the word 'relationship' however annuls the strive to be non-anthropocentric in my opinion) or "ethnobotany".[33] Acknowledging the misconstrued anthropocentric label assigned to "plant communication" however, I will continue to use this term over the scientific terms stated due to the different meaning I have assigned to communication and language within this chapter, that being that both communication and even language also exist in a phytocentric sphere of existence. The rhythm of communication between humans and plants is at a completely different frequency and experience from human to human communication or vegetal to vegetal communication. During the vegetal to human communicative process, humans are

[32] C. Picard, "Conceptions of Plant-life: An interview with Giovanni Aloi", *Bad at sports,* August 2016. http://badatsports.com/2016/conceptions-of-plant-life-an-interview-with-giovanni-aloi/. (22 September 16).
[33] G. Witzany. "Plant Communication from a Biosemiotic Perspective", *Plant Signaling & Behaviour*, Vol. 1, No. 4. July-August 2006, pp. 169–178.

arguably external observers rather than possessing the ability to reach into the 'skin' of the vegetal (discussed further in chapter 3.1) thus, it can make it difficult to consider encountering the vegetal through their perspective within the world. If we look again to the case study of this chapter, *Skotopoesis,* it can be seen as an example of a moment of reaching outward from oneself into that of the vegetal (as discussed in chapter 1.1) Petrič attempted to remove herself from human ways of being when confronting the vegetal and tried to avoid a human rhythm in order to communicate with the vegetal by surrendering to them at a slower lingering pace. But could she have encountered the plants more personally, to know them better? Another way to reach out to the vegetal could be to take into consideration the possibility that a language exists within plant-life, that language is not limited to humans. For humans, language or making sense of the world in words (even sign language for instance though happening in gestures is translated to words), is an integral aspect of meaning-making in order to share collected and received information from our surroundings, with other humans (also to domesticated animals but the boundaries are also apparent there) and consequently improving our chances of survival. But plants and other nonhumans also need to constantly interpret their environment in order to thrive; they also possess methods of making sense of the world and communicating that to other living beings. Their language may not be verbal in the way that humans consider language, but in fact non-verbal.

Marder's writings on reconnecting to plants and plant communication highlight that we should step 'outside' – outside of what we consider to be the human milieu – where it might become possible to reconnect with and allow vegetal-beings to express themselves non-verbally to us.[34] But how do we reach out and make meaningful encounters if the communication level is not only non-verbal which on its own does not cause so much distress, but is also at such a different rhythm? In the process of vegetalization, as mentioned earlier something that may help us to dissolve barriers existing between plant/human communication, exists this different rhythm. I imagine it to be something akin to the snaking rhythm of Jazz, improvisatory, revealing and

[34] M. Marder, "Could Gestures and Words Substitute for the Elements?", in L. Irigaray and M. Marder, *Through Vegetal Being: Two Philosophical Perspectives* (New York: Columbia University Press, 2016), pp. 190-195. pp. 194.

unrevealing itself, running on an unpredictable beat, or like poetry which allows us to twist and deconstruct the conventions of the written and spoken word. In fact Jane Bennett in 'Systems and Things', writes that poetry can be a mechanism through which we can "feel the liveliness" of nonhuman beings that is usually hidden from us.[35] Thinking of language in this way can also direct us to new forms of dialogue with vegetal-beings, which poetry can achieve through its deconstruction of our restricted notion of language: "[...] poets can lead us into a new dialogue with plants because their life's labour is to hack the structure of language itself."[36] But, how can we perceive this incalculable language and its rhythm? Indeed, poetry can provide us with a richer understanding of how to first push the boundaries of the human world. For instance, in Amiri Baraka's *Funk Lore* poem, 'JA ZZ: (The 'Say What'?)', he breaks down the calculative beat of modern being by developing poetic forms of jazz rhythm that re-envision relations, communications within the world. This can be seen as a bringing forth of an alternate universe that swings back and forth between the lines like a pendulum.[37] Baraka liberates us from the fast-paced rhythm of modern existence, opening up this alternative universe with a snake-like, jazzy, immeasurable beat:

> 'Yes Bees !
> God-Electric
> Come Coming
> Fire Jism
> S H A N G O
> CANTO JONDO
> Eternity Power
> Living Happiness
> […]'[38]

The strength of Baraka's poetry lies in its ability to draw this universe, which is 'otherwise' than our exploitative, manipulative world based on power and global

[35] J. Bennett. "Systems and Things: On Vital Materialism and Object-Oriented Philosophy", *The Nonhuman Turn.* Ed. by Richard Grusin (Minneapolis: University of Minnesota Press, 2015), pp. 223-239, p. 235.
[36] J. Hamilton, "Bad Flowers: The Implications of a Phytocentric Deconstruction of the Western Philosophical Tradition for the Environmental Humanities", *Environmental Humanities,* Vol. 7, 2015, pp. 191-202, p. 200.
[37] See "degrees of swinging": that is, as motion in between, as degrees of extension, never reducible to polarizable fixities in K. Ziarek, *The Force of Art* (Stanford: Stanford University Press, 2004), pp.130-131.
[38] A. Baraka, *Funk Lore.* Ed. Paul Vangelisti (Los Angeles: Littorial Books, 1996), p.9.

production, out from in between the 'cracks'.[39] Even so, it seems to enhance human existence and not the vegetal. On the other hand, I argue that perhaps we can get to the vegetal rhythm by first crossing a bridge from our language as we know it to this 'in between' language within poetry. This bridge could ultimately lead us to go beyond ourselves, to get to the vegetal being. After all, the alterity of the vegetal-being is something which is also marginalized and exploited in modern life and whose 'silent' language we are trying to seek out, find a way of making-sense-of or at the very least reveal it in some form. The alternative form of dialogue as something which seems to go 'beyond' our understanding and senses. Like in Baraka's poetry, the language of the vegetal-being might find itself to exist in a different key to usual language. This is just the starting point of where one can go with the notion of rhythms in the process of vegetalization and plant-language through contemporary art.

The idea of forming a language used by both nonhumans and humans is also echoed in the convictions of biologists Monica Gagliano and Mavra Grimonprez who stress that:

> "We need to envision an empirically tractable and phylogenetically neutral account of language […] that resists the temptation of looking for evidence of signaling systems in the nonhuman world that exhibit the various forms of signaling and communication that jointly make up human language."[40]

They propose that meaning-making in all that lives can manifest itself through language, human or nonhuman included, which reveals to us a plethora of new ways to communicate and encounter the vegetal. Recent findings have even found that plants can actually both produce and respond to sound and use scented 'words', this type of language belongs to what humans might consider in terms of silence, inclusive of colours, shapes and scents.[41] We are trying to move away from the inadequacies of our human senses and the traditional consideration that our senses are objective attributes. In the words of Galileo we can consider that the senses, "are nothing other than mere names, and they have their location only in the sentient body. Consequently, if the living being

[39] Ziarek, *The Force of Art,* pp.130-131.
[40] M. Gagliano and M. Grimonprez, "Breaking the Silence – Language and the Making of Meaning in Plants", *Ecopsychology,* Vol.7, No. 3. September 2015, pp. 145-152, p. 146.
[41] Ibid. p. 148.

were removed, all these qualities would disappear and be annihilated."[42]

As a final extension of this idea of plant language I turn to art and once again to object-oriented ontology which can enable us to envision how the world might appear to the vegetal-being, through the ways in which we instil apparatus or interfaces in order to make it possible to communicate (discussed further in chapter 3). In Arie Altena's essay 'Making Things Speak', he describes how art is what enables things to speak to us: objects considered as 'things' means to (with reference to Bruno Latour), 'acknowledge their 'network aspect' or that they are a gathering of attachments or interests.[43] *Skotopoesis* allows plant-life to 'speak' or communicate with us, through a form of language which albeit might appear inaudible. If we provide plant-life with modes of expression that can be in turn translated to humans, and understood by us then what will this however achieve: "If we make things speak, what kind of talk will ensue from them? What will the effect of what they say be?"[44] Another interesting point of exploration to consider is if things or vegetal-beings do speak, are they indifferent of our human world and will they even speak to us? *Skotopoesis* and *Folk Lore* poetry have provided us an interesting foundation from which to cultivate discussion around expanding upon the notion of communication between plant and human.

Marder has taken us beyond the limited way in which we understand language, instead emphasising that we not only should accept the idea that we (as 'humans') might never be able to come to a complete understanding of plant-life, and that learning to communicate/learning from them is a never ending life-long process worth committing to: "There is no secret recipe for imbibing the lessons of plants and the living energy of the elements, except that you must persevere as their apprentice without a term of maturation […]."[45] But we must also not assume that these vegetal-beings will communicate back to us in a language that is familiar. To conclude, we have to work collaboratively with the vegetal in the sense that the plants involved in the artworks are 'involved' in the creation of the artwork or as J. Hamilton puts it: "Respectful creative

[42] Galileo Galilei, *The Assayer (*Italian: *Il Saggiatore)* (Rome: Giacomo Mascardi, 1623), pp.196-197.
[43] A. Altena, "Making Things Speak*", Dark Ecology*, 2015. http://darkecology.net/field-notes/making-things-speak. (9 September 2016).
[44] Ibid.
[45] Marder, "Could Gestures and Words Substitute for the Elements?", p.195.

collaboration can happen if, and only if, the different temporality inhabited by plants is factored into the artistic process." [46] We must learn to communicate in a different way, at a rhythm in which we let go of our human constraints of a fast-paced time scale if we want to encounter plants from a non-anthropocentric stance.

[46] Hamilton, "Bad Flowers", p. 196.

2. Eradicating Boundaries between 'the Work of Art' and 'the Work of Nature'

The previous chapter has already meditated upon the thought processes required to encounter plant life in a non-anthropocentric way and how altering the rhythm of our existence and surrendering to what is described as 'vegetalization' can draw us closer to an encounter with plant-life. We have discussed the manner in which the post-anthropocentric nonhuman turn, around which this research revolves, and specifically how it envisions that 'our' world is inhabited by, "lively and essentially interactive materials, bodies human and nonhuman […]".[47] Nature can also be considered as an anthropocentrically scaled notion, which according to Timothy Morton, does not serve a purpose anymore.[48] This leads to contemplation around how bio art in particular, drawing science and art together, can reveal art as a living system which I argue can attempt to eradicate the boundaries between a work of art and a work of nature. In turn it chips away at what is traditionally regarded to be 'nature'. How can this enhance the meaning-making agency of nonhuman bodies (plant bodies) through collaborative art projects? As discussed in chapter 1.2, collaboration was a key finding from *Skotopoesis,* the cress shaped the artwork and Petrič allowed the plants to behave as they would when confronted by a shadow for an extended period of time. Avoiding the acceleration of time to a human time scale lead to the etiolation and thus the silhouette of the artist in the cress. In this chapter I also look at a collaboration that objects the forcing of plants into 'unnatural' shapes or proportions, allowing the plants instead to 'create' on their own.

The aim here is to highlight other techniques within (bio)art that also reveal the active participation of vegetal-beings in this shared world. George Gessert's selective breeding of flowers (since 1985 until present) are taken as the case study in the first part of this chapter particularly focusing on what happens to our encounter when we are confronted with the inner processes through the selective genetic breeding of plants. The focus is on his hybrid irises as bioart, the aesthetic dimension of these works and the formation of art as a living system. But just what is it that specifically bio art can allow us to learn from plants, both non-aesthetically and aesthetically? Do Gessert's hybrid irises

[47] Bennett, "Systems and Things", p.224.
[48] "nature© by Aleppo @ Parckdesign2016 - Timothy Morton", *YouTube.*

end up reiterating anthropocentrism through aesthetics or are these other means through which to strengthen our encounter and improve prospects of being with the vegetal? Certainly, the complex processes of vegetal beings can be visualised and portrayed through artworks and the unexpected combinations that might emerge, which opens up whole new territories where changes in perspectives and attitudes towards plants can manifest themselves. The second part of the chapter is concerned with the issues arising from exhibiting plant-life, for the exhibition of living material causes both ethical and practical considerations. But how exactly does this span out with vegetal-beings for whom we have thus far found it difficult to propose ethical guidelines or think about ethically. Perhaps most importantly I look at what happens to the exhibited plants once the exhibition has ended.

2.1 Aesthetics and Bioart: Vegetal Art as a Living System

Aesthetics and encountering the vegetal-being as 'art' might appear to be entirely anthropocentric from the outset. In this case aesthetics can be understood as, put simply, 'the branch of philosophy that deals with questions of beauty and artistic taste.'[49] George Gessert's selective breeding to produce floral hybrids (1985 – present) or what he calls 'genetic art' due to the manipulation of DNA which is an inherent part of the breeding process.[50] Within the context of this research discussing his cross breeding of Pacific Coast native irises (Fig.3), as these are the flowers he often focuses on as it grows wild in western USA where he resides, might at first appear to be centred around the human and our needs to create aesthetically pleasing flowers that we can declare to be "human masterpieces". Due to established flower breeding practices this has been happening for thousands of years largely for the demands of market and economic interests. Referring to the history that is shared between aesthetics and plants within plant breeding and genetic engineering, one might become confused as to how aesthetics can be included within this research paper that tries to establish deeper connections (or encounters) with

[49] "Definition of *aesthetics* in English", *English Oxford Living Dictionaries,* 2017. http://en.oxforddictionaries.com/definition/aesthetics. (12 December 2016).
[50] L. Cinti, "The Sensorial Invisibility of Plants: An Interdisciplinary inquiry Through Bio Art and Plant Neurobiology", *UCL Discovery,* Doctoral Thesis, UCL (University College London), 2011. http://discovery.ucl.ac.uk/1310152/. (11 July 2016), p. 72.

plants through contemporary art. Undoubtedly human intervention into plant growth and genetics too often overlooks the vegetal-being as an active agent, as Michael Marder puts it: "[…] cultural modes of routing growth rely on violent impositions that fail to respect the inherent tendencies of plants themselves."[51] We only have to look to the alarming rate at which we are losing biodiversity on this earth due to the unprecedented expansion of monocultures (as one out of many factors contributing to this loss) to find the counter productivity of such an anthropocentric approach to plant life; plant life after all thrives off of dispersion and multiplicity.

We might also begin with the misunderstanding that Gessert's selective breeding of irises for their aesthetic qualities allowing for the emergence of hybrid varieties, is primarily concerned with 'beauty' and economic gain (which would steer us in the direction of monocultures again), thus conforming to human demands and standards – in effect to a largely hostile and anthropocentric view. However, Gessert is in fact an avid advocate of biodiversity and from his various writings it is evident that his approach to plant breeding leads to a widening not a narrowing of different species of flowers, for instance he uses evolution itself as an art-making tool. Also, he uses both wild as well as already existing flower varieties in his cross breeding, and ensures that the species come from various geographical origins.[52] Even though they are engineered to evolve a certain way, their environments and own 'natural' growth directions also account for diversity through which unpredictable hybrids emerge, even unknown species of flowers. Instead of intensive and invasive breeding techniques such as those used by Gessert's predecessor Edward Steichen, who worked with mutagenics such as colchicine or recombinant genetic techniques to produce hybrid *Delphiniums*, Gessert uses hand pollination and traditional horticultural methods thus giving more freedom to the plants, also not going beyond the rhythm of growth inherent to the flowers already.[53] Gessert is critical of certain approaches to selective breeding, which are rooted for example in George Glenny's 'standards of excellence' from the 1830s. These standards were defined by what Gessert considers to be 'unnatural' or alien shapes and patterns for flowers

[51] M. Marder, "The Place of Plants: Spatiality, Movement, Growth", *Performance Philosophy* , Vol. 1, 2015, pp. 185-194, p. 187.
[52] G. M. Gatti, *The Technological Herbarium,* Ed. and Trans. by A. Schapiro, (Berlin: AVINUS Verlag, 2010), pp. 214-215.
[53] Cinti, "The Sensorial Invisibility of Plants", p. 69.

(Fig.4), forms that disregard the way in which flowers would grow if they were allowed to follow their own course of growth.[54] For instance, hybrids bred to be composed of 'kitsch' dramatic contrasting colours that one would instantly notice to appear as out of sync to the traits seen in a particular breed of flower or excessive ruffling, which is usually highly regarded by commercial plant breeders. He stresses that his own work is actually primarily a celebration of plants: "their beauty sometimes, but mostly their admirable strangeness."[55] He enhances the traits that are particular and inherent to each of the flower breeds already instead of forcing them into so-called unnatural directions, ensuring that the plants do not fall into the trap of representing something other than themselves, which also is in line with object, oriented ontology. Most importantly, his work is about celebrating the creation of a world that appears to have arguably more freedom than our own, with regard to the fact that the artworks (hybrid flowers) are seemingly allowed to manifest themselves beyond control. In turn it highlights how little we actually understand or can control within what we consider to be "our" world, when the results of the efforts here for example create flowers or life forms that have never existed before.[56]

Against forcing plants to grow into particular shapes of geometric precision that conform to the highly normative aesthetic practices mentioned above, Gessert wants to observe the flowers response to breeding and the process of evolution that consequently takes place, for which he is just the facilitator. The creation of the hybrids occur on the irises own terms, resulting in the formation of unique artworks created by the irises themselves in their own particular vegetal time; for instance, it takes two to four years for the hybrids to fully bloom. This requires a lot of patience on behalf of the human, a certain level of vegetalization one could argue. It is similar to Petrič's attempt in *Skotopoesis* for the patch of cress to respond to her human disturbance of their vegetal states (in their varying multiplicity, for there were around 400,000 cress and only one human) through which she patiently lingered in 'vegetal time' for the plants to create the artwork. Albeit she did not have to wait for years to see the result of the art created by the

[54] G. Gessert, *Green Light: Toward an Art of Evolution* (Cambridge: MIT Press, 2010), p. 55.
[55] Gatti, *The Technological Herbarium,* p. 243.
[56] G. Gessert, "Why I breed Plants", *Signs of Life: Bio Art and Beyond.* Ed. by Eduardo Kac (Cambridge: MIT Press, 2007), pp. 185-197, p. 196.

plants like Gessert often does. He explains this idea of the artist as facilitator of the artwork with the vegetal-being best in the interview 'Bio art through evolution':

> "Creativity is not some special capacity of artists, but of everything that exists. The job of the artist is not so much to create, as to help what is latent in things manifest itself. In a way the job of the artist is to leave himself out."[57]

It is a significant statement that he makes when he proposes that the artist should leave himself 'out' of the artwork when working with all things that exist, which I take to of course include nonhumans. This acquires a specifically post-anthropocentric reading, for he does not focus on the human as centre of the creation of the artwork, which arguably could be the case in *Skotopoesis* for instance, instead recognising the alterity of being of the plant-life and harnessing their 'strangeness'. In other words, the flower is the central point for Gessert from which encounters manifest themselves, instead of the earth pivoting around the human. However, it can also be argued that he does not completely leave himself out of the artwork but rather he works in a sort of symbiosis. After all, a facilitator can channel the direction that the being will take; in this case the direction is ultimately hybridization, through the genetic material of the flower that he manipulates. So in a way, by working in a symbiotic collaboration Gessert relocates his position as a human, breaking down hierarchies within this ecological system of living beings. The irises are nurtured, allowed to flourish and continue their lives as they would, made possible by the artist meanwhile Gessert himself benefits from encountering something beyond the human and learning from this vegetal-being. This 'learning from' is established in the years he has crafted his breeding technique through the direct response of the irises and what they have revealed to him of their inner most processes. The 'lone' artist becomes the not so lone through collaboration with the irises – the irises therefore can be considered as valid contributors, as agents of meaning-making themselves, through their generous effort to the creation of the art. However, it is important to note here that we can never be certain that the plants want to 'collaborate' with us, let alone be the creators of artworks themselves. According to object-oriented ontology, objects hide themselves from the world only to also reveal glimpses of themselves, of another world

[57] "Bio art through evolution: George Gessert", *Revolution Bioengineering,* 2010. http://revolutionbio.co/bioart/bioart-through-evolution-george-gessert/ (23 December 2016).

that is beyond our comprehension or access.[58] Considering the irises as 'objects' in this sense can bring us closer to their alterities of being. The collaboration they offer us during the process of an artwork may also present itself through this withdrawing and revealing, which can however make it difficult to form a straightforward collaboration, for either the human or the plant can at any time be imperceptible to the other (imperceptibility discussed further in chapter 3).

The artistic team Christa Sommerer and Laurent Mignonneau describe the convergence of technology, art and plants as living systems.[59] Gessert's artworks can be regarded as living systems of their own accord in this case since they engage with actual life forms and their processes. Furthermore, a definition for system can also help us to engage with this idea: "A set of things working together as parts of a mechanism or an interconnecting network; a complex whole."[60] Regarding the system as a complex whole takes on what Morton calls 'explosive holism', that the whole is in fact *less* than the sum of its parts, not the inverse as we usually consider it.[61] With this in mind, we can regard Gessert's hybrids to follow this complex living system modality in the sense that both the nonhuman and 'human' parts are what make the art occur: Gessert as the facilitator, the technology for breeding, the irises themselves (from seed to flower), and the elements needed for growth i.e. earth, sun, water, etc. In this art system is where collaboration with the vegetal-being can take place and where it can even be possible to perceive new ecosystems. Gessert's irises regarded as living systems, blur the boundaries between new technologies and 'nature' as we know it, creating a new world in their wake; new realities can manifest themselves through biology and art. However, entering this new world is not all that easy. As mentioned in the introduction to this research paper, due to the quantity of new realities and new phenomena, new ways of thinking are critical for our ability to value the new life forms that emerge out of fusion of post-anthropocentric thought and art. Despite the difficulties, conceiving vegetal artworks as living systems can connect us to the latent energies within plants. Gessert, through selective breeding

[58] Bennett, "Systems and Things"*,* p.226.
[59] Gatti, *The Technological Herbarium,* p. 182.
[60] "Definition of *system* in English", *Oxford Living Dictionaries,* https://en.oxforddictionaries.com/definition/system. (15 December 2016).
[61] "nature© by Aleppo @ Parckdesign2016 - Timothy Morton", *YouTube.*

techniques, is *enhancing* and interpreting the values of what is already inherent in the flowers:

> "Genetic art is not simply a matter of inscribing individual human ideas and fictions into the DNA of other beings… On the deepest level, genetic art is about community, the community of living beings."[62]

The specific community that he is talking about stems from hybridization as a portal through which we can get to know the plant, to get to know what plants actually are which can lead us to interconnect with and be curious about other living beings besides ourselves. The community that opens up as a consequence of the artwork reveals the multiplicity and variety of being that exists within plants and we can in turn stand in solidarity with this alternate mode of being. Solidarity can be defined as a type of mutual support within a group of living beings, in other words, "a unity (as of a group or class) that produces or is based on a community of interests, objectives and standards."[63] However, it is important to note here that within this community, if we want to remain non-anthropocentric we should avoid reflecting our human values onto the plants, as mentioned earlier.

Gessert does at times fall into this anthropocentric trap. For instance in his exhibition *Art Life* (1995), he exhibited a variety of different breeds of flowers which visitors were then asked to judge based on their own subjective aesthetic preferences. They contributed to the fate of which of the flowers would be kept alive, and would be determining the course of next generations, and which would be composted and no longer free to grow or be part of this collaboration. But of course death is inevitably something all living beings will face, as put by Gessert: "death is in the wings of every aesthetic decision."[64] This is an explicit example of how the artist or even the visitors in this case contribute to the anthropocentric perception of the flowers, which are the direct result of the artist's own aesthetic selections. This strongly collates with the instrumentalisation role that we too often assign to vegetal-beings. Gessert for instance also compared the unconsciousness of 'non-feeling' and 'non-experience' humans encounter under general

[62] Gatti, *The Technological Herbarium,* p.214.
[63] "Definition of *solidarity", Merriam-Webster Dictionary*. http://merriam-webster.com/dictionary/solidarity. (26 December 2016).
[64] Cinti, "The Sensorial Invisibility of Plants", p. 73.

anesthesia can be comparable to the unconscious state of vegetal-beings.[65] This again reflects subjective human values onto plants; a subjective humanistic perspective, when trying to get closer to the nonhuman, is not the way to achieve this. This prompts some difficult questions with regards to Gessert's hybrids – are the artworks emphasizing the plants' inner processes or is the focus ultimately directed more towards what the plants will give to him in terms of outputs? By outputs I mean the aesthetic values and morphological attributes that the hybrid artworks present which, by themselves, lead the human back to largely humanistic perspectives. In fact Gessert himself is also aware that these kinds of questions are unavoidable when one concerns their artistic focus heavily on aesthetics. He warns, and at times scolds himself, about sticking too rigidly to an aesthetic vision (Fig. 5), as this can obstruct the emergence of new living beings (through a relentless disposal of flowers which he regarded as aesthetically non-pleasing) that could perhaps result in even better collaborations or as he puts it 'relations' to vegetal-beings.[66] The difficulty is apparent and whether we can escape reductive thoughts is up for speculation – Morton questions for instance whether a dualistic way of thinking about the world, of separating nature and culture, can be seen as, "an ideological feature of the way in which the world operates."[67]

Genetic engineering and breeding practices in relation to bioart are usually discussed through ethical, social, political or cultural implications, but here, through Gessert's hybrids we have discussed the role of technology in the enhancement of aesthetics - his artistic focus investigates the, "role of aesthetic perception in bioart and other interventions in evolution."[68] His irises are indeed noticeably aesthetic and through this an unfolding of how we can redefine aesthetics and the type of aesthetics that we place value upon occurs. Gessert might not follow strict standards of excellence but he does still follow his own canon of aesthetic features – in the irises he looks for simple lines, thick veins rather than intense ruffling or colour contrasts, therefore arguably returning to forms of iris related to the original varieties rather than those popular by high demand of the market. Marder for instance argues that aesthetics is vital as an alternative

[65] Gessert, *Green Light,* p. 6.
[66] "Bioart through evolution".
[67] T. Morton, "*Ecology without Nature",* p. 23.
[68] A. Mulder, "The Beauty of Agency Art", *Vital Beauty: Reclaiming Aesthetics in the Tangle of Technology and Nature*. Ed. by J. Brouwer et. al. (Rotterdam: V2_ Publishing, 2012) p. 195.

to the violent impositions against vegetal-beings.[69] Arguably, through aesthetics we can try to experience a different mode of being through non-violence as proposed by Adorno, in that aesthetics grants us distance, a distance from which we can encounter the vegetal without destroying it.[70] Distance avoids the devouring of a being and thus emerges a shared world.

Looking back on Morton's statements that nature is in fact not real, in that it is not separate from humans or other things on earth, both inanimate and animate, and having come to conclusions that one could read the work of art and the work of nature without boundaries, we can also conclude that the works of art that are Gessert's hybrid irises are in fact equal and the same as a 'work of nature'. For the manipulation that determines their aesthetic vibrancy and attractiveness, does not elevate the hybrid irises to a higher status than their 'natural' version for it can be argued that no natural version existed to begin with. Admittedly it is exceedingly difficult to think in this way most of the time but one has to start somewhere. A new hybrid of plant reveals itself yet to what extent through aesthetics can we get to know it? In the sense that does it reveal to us something about vegetal-life that other forms of engagement do not.

2.2 Considerations on the Methods and Ethics of Exhibiting Plant-Life

We have discovered that Gessert's flowers, as living art systems, are exemplary of the blurring of boundaries and chipping away at western dualisms that have existed between the work of art and work of nature – culture and nature – and have become acquainted with a hybrid plant. Even through genetic manipulation the iris hybrids have been allowed to proceed with their unpredictable directions of growth, left to their own devices, to in fact collaborate within these living art systems. With the idea of art as a living system in mind it is not only interesting but also of significant importance to discuss the exhibition of plant-life, how this can be ethically managed and the considerations and debates that can emerge from this. The exhibition of living material, with regards to bio art, has been long discussed but plants have mostly been left out of

[69] Marder, "The Place of Plants", p. 187.
[70] Morton, *Ecology without Nature*, p. 25.

this discussion, pushed to the peripheries and considered to occupy a lower status than sentient beings. During the course of this chapter I discuss the choices and methods that both Petrič and Gessert have made during the exhibition of their vegetal artworks, in relation to some ethical concerns. For instance, we have to recalibrate how to conceive ethical relations towards plants. The artworks, in most cases discussed in this research, are ephemeral yet the plants are living beings who would otherwise continue to exist outside of the duration of the exhibition or performance. It needs to be evaluated whether we could also be discarding a significant collaboration or new form of life, one which the artist and vegetal beings worked hard to achieve in the process, if the plants are simply thrown away at the end. How do we deal with the end of the exhibition of artworks involving plants? This calls for further questioning – how can the plants be disposed of or will they be composted, perhaps even consumed? Are these inherently anthropocentric motives, reinforcing our tendency to instrumentalise plant-life? Can we be certain how the people working at the institution will treat the plants (for they are living beings and require certain conditions) during the exhibition or when the exhibition has come to and end, in spite of ethical guidelines proposed by the artists?

When displaying or exhibiting living material several issues have already been raised with regards to nonhuman animals and humans but not so much light has been shed on the exhibition of plants. Amalia Kallergi provides a thorough overview of significant considerations and the practical issues of exhibiting living beings, in 'Bioart on Display', in which she states that due to the involvement of living beings in bioart, special conditions and arrangements are of course required. For example, staff at the institution or gallery must be trained and capable of maintaining the works by feeding, watering, providing light, maintaining temperature or controlling specialised lab conditions, for instance, which might also require outside personnel.[71] Some of the methods are not only expensive and time consuming but may call for a complete reorganisation of the architectural space within the institution.[72] One such example of this is Gessert's *Iris Project*, which was part of the exhibition *Post Nature* (1988) at New Langton Arts Gallery in San Francisco. The *Iris Project* consisted of an arrangement of

[71] A. Kallergi, "Bioart on Display: Challenges and Opportunities of Exhibiting Bioart", *Kallergia.* Leiden University, 2008. http://kallergia.com/bioart/docs/kallergi_bioartOnDisplay.pdf. (26 December 2016).
[72] Ibid.

forty-six iris hybrids in pots to resemble "a hybridizer's field plot" (Fig. 6.) and for which he had one internal wall removed and windows installed to let in sunlight, for the gallery was illuminated only by small skylights and 'artificial' light.[73] Also, as with any artwork involving living beings, a certain degree of unpredictability is expected and patience is required on behalf of the human in particular to the rhythm of vegetal beings which, as discussed in chapter 1.2, is something that one can attempt to join *per se* through a process of attempted vegetalization or surrendering to a vegetal rhythm of existence. In the case of the *Iris Project,* a heat wave triggered the irises to bloom earlier than expected thus, only documentation of the hybrids and plant pots with their greenery remained as tokens for the actual exhibition – aesthetically speaking a failure for Gessert.[74] Genetic art in particular according to Gessert, is seasonal, eco-system specific and also often self-replicating.[75] Artists working with plants should therefore always be prepared for the artwork that they are exhibiting to not fit in exactly with the scheduled duration of the exhibition slot. Arguably, the plants 'not fitting in' can instantiate a point from which we can already find a de-centring of the human taking place during the process of the artwork; the plants are evidently centred around their own point of reference and have no (apparent) regard for a human reference of the world.

Museums and galleries follow human time-scales so in order to exhibit living plants the usual operations and logistics of the space will have to be temporarily interrupted to accommodate these beings and their 'constant' presence in the space. Would it ultimately be more favourable to exhibit outside of the confines of institutions instead, in the open air for example in a garden or field as these spaces *might* already account for vegetal time. They are also not as restrictive for vegetal growth as the confines of the museum or gallery space often are.[76] Petrič's performance for instance took place inside at the Kapelica Gallery during which the plants were under weak artificial lighting, without soil or exposure to essential elements e.g. sun and rain – this makes one consider whether it was as centred around the vegetal-being as first thought.

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[73] G. Gessert, "Notes on Genetic Art", *Leonardo,* Vol. 26, No. 3, 1993, pp. 205-211, p.208.
[74] Ibid.
[75] Ibid. p. 210.
[76] G. Gessert, "On Exhibiting Hybrids", *Genetics and Culture.* http://geneticsandculture.com/genetics_culture/pages_genetics_culture/gc_w02/gc_w02_gessert.htm, (22 December 2016).

Another problem arising from (bio) artists exhibiting plant-life within the setting of a museum or gallery can indeed be the traditional notion of museum architecture as a space that reinforces the dualism between nature and culture.[77] This can make it difficult for the artists and viewers to escape anthropocentric ways of encountering the vegetal-being in such an institution, obscuring what it means to be a plant and can bring back past prejudices attached to these living beings.

For instance, Gessert has also been criticised for conforming to a traditional white cube layout in some of his exhibitions.[78] *Iris Project* was exhibited in a gallery (Fig. 6.) that embodies this kind of space for example. Even his exhibition *Iris Selection: Painting With DNA* (1990) which was planted outside in the courtyard of the University of Oregon Museum of Art however, was intended to appear more 'white cube' than it ended up being. For this exhibition, Gessert planted several iris hybrids into a part of the courtyard where shrubs of azaleas sat dormant, that Gessert did not at first take notice of, which were to present the backdrop for the hybrid exhibition.[79] However, the azaleas bloomed at the same time as the hybrid irises were planted; the intense red bloom of the azaleas overshadowed his iris artworks which were much more sombre in palette and were therefore 'lost' in the mass of red. Although Gessert refrained from uprooting the azaleas for their 'interference' in his exhibition, he did however instruct the museum to plant white flowers after the show was finished so as not to distract from the irises in the future, to create a space that resembles a white cube space arguably free of distractions other than the art showcased.[80] Yet, this white cube space is not free of its dualistic connotations, which Gessert at times succumbs to. This makes one consider whether bioart, and indeed art involving plant life should be exhibited in the traditional spaces of art? His negative reaction to the azaleas that were already present in the courtyard also points to a highly subjective and anthropocentric regard for exhibiting. He in fact does not strictly define in what sense the azaleas, apart from their aesthetically stronger presence, create a negative dynamics for the exhibition of his hybrids. If as stated by Gessert himself, that he is most interested in eradicating boundaries between art and

[77] Ibid.
[78] Cinti, "The Sensorial Invisibility of Plants", p. 78.
[79] Gessert, "Notes on Genetic Art", p. 209.
[80] Ibid.

nature and humans and nonhuman living beings (specifically plants) than could the blooming of the azaleas alongside his hybrids constitute a collaboration and a welcome addition to the artwork itself? A way of 'getting to know' other beings? Or merely an unavoidable part of art as a living system where many species (whether flowers or not) will come into close encounters unexpectedly? Could exhibiting in spaces outside of museum or institutional settings, in the so-called "wild" for instance, emphasise the vegetal-beings participation in the artwork more than the traditional spaces of art?

Perhaps yes, but even so it cannot be ruled out that open air spaces also come with their own considerations. Gessert's 'open air' genetic artwork *Scatter* comes to mind. *Scatter* is an on-going project since 1985, during which he has released numerous varieties of hybrid iris seedlings into the 'wild' namely in the High Cascade Mountains in the US. The scattered seedlings received, I would argue irrational, critique with people even calling his introduction of hybrids into areas of officially designated wilderness as "genetic-graffiti", claiming that the new species would become invasive or somehow pollute and disrupt the existing flora of that environment.[81] However, Gessert was not irresponsible. He used non-invasive iris breeds and was also mindful of where he scattered the seedlings, for instance sticking to heavily travelled paths where a change over of seeds from outside the area would be high regardless of his contributions.[82] This type of project lends us a position to see the complications that can arise from exhibiting in the open-air and also directs us to how we can attempt to experience plants in their multiplicity of being, from a non-anthropocentric perspective. *Scatter* reveals the tendency for humans to separate themselves from nonhumans and ideas of 'nature' so greatly, as the critics of Gessert's project did through their claims that it pollutes designated wilderness areas which are claimed to be 'pure nature' – as if existing as a separate world left untouched by mankind.[83] A state of pure 'nature' does not exist, as we have already discussed earlier with regard to nonhuman perspectives and Morton's statements, that we as humans are not divided from nature. Gessert takes a similar attitude when defending *Scatter* by stating that: "The words "nature" and "wilderness" have multiple meanings, but we and all our works are part of nature in any scientifically

[81] A.M Youngs, "The Fine Art of Creating Life", *Leonardo,* Vol. 33, No. 5, 2000. pp. 377-380, p. 378.
[82] Gessert, "Notes on Genetic Art", p. 209.
[83] Ibid, p.210.

accepted definition of the word."[84] One could argue that exhibiting genetic art or works collaborating with plant-life in areas claimed by humans to be inherently wild or 'natural' somehow, can call attention to the active participation of nonhumans (particularly vegetal-beings) by exposing new ways to disclose this participation.

On the other hand, looking back to exhibiting plant-life within galleries or museums, to what extent do these spaces also emphasise the intrinsic value of plants perhaps more than if we were to encounter the plants in an everyday 'outdoor' setting?[85] Bringing attention to plants within a contemporary art environment can direct people to consider plants on some elevated level, bringing them forth from their inconspicuous backdrop to human-centred lives. Contemporary museums and galleries can bring the focus to plant-life through their provision of dedicated spaces for exhibiting alternate experiences. For instance, Petrič's experience through the attempt to surrender to vegetal-time through her active inactivity, through the secular space of the gallery, brought performativity to the focus as an alternate discursive plane through which to encounter the vegetal-being. The gallery provided a space where to realise her performance, where the public could observe this attempt at a non-anthropocentric intercognition between species. Petrič herself stated that it also encouraged people to share to her and other onlookers facts about plants, some people even lingering there for a while alongside the artwork, alongside the cress.[86] Even so, it is still important to bear in mind how something like a more 'permanent' structure of the gallery or museum, which is not exposed to the elements to which plants usually would be in their milieu, would affect an ephemeral vegetal artwork.

So how then do we address whether there can be an ethical approach regarding vegetal beings within the exhibition space. *Skotopoesis* was presented to the ethical committee 'Trust me I'm an Artist' and a panel discussion was held during which it emerged, despite Petrič's efforts to emphasise the nonhuman perception of the vegetal being, that plants were still assigned human values when speaking in relation to ethics.[87] Questions were asked such as: do the plants possess an 'intelligence' or intentionality?

[84] Ibid.
[85] Gessert, "On Exhibiting Hybrids."
[86] Petrič, "The Conundrum of Plant Life", p.269.
[87] Ibid.

Can they respond to the environment in a non-machinic way? Petrič contends that during the ethical panel the intrinsic worth of plants never came up.[88] This could cause major issues when an artist wants to realise ethical relations towards vegetal-beings, in artworks where the aim is to collaborate with them, not disregard their significant position within the artwork (regarded as a living system), and experience plants from a non-anthropocentric perspective. If we cannot create an ethical environment in which to exhibit plants and if ethical committees seem to possess a lack of concern for the intrinsic worth of plants how can we proceed with the performance or display of a vegetal artwork? Or to put it another way, we might have to accept that the failure to de-centre the human or create an exhibition space that only regards human values, might un-do all the hard work that both the artist and (more questionably) the plants set out to accomplish during the artistic process. Is there a way to still maintain the place of plants as active participants in meaning-making and agents of their own accord within an exhibition space?

As a final part to this chapter, I want to highlight the dilemma we might be faced with at the end of the exhibition – do we 'dispose' of the vegetal-beings, harvest them for consumption (if an edible variety of plant) or do we grant them their vegetal freedom by releasing them back into their milieu, either as seeds or as the mature plants rooted back into the earth? Indeed Gessert for instance has either given away his hybrids as gifts to visitors, sold them or destroyed/composted them. *Skotopoesis* can also be discussed particularly in relation to the consumption of vegetal artworks at the close of an exhibition. Petrič requested that the cress be harvested and consumed accordingly after the exhibition ended as the cress seedlings were intended for human consumption. However, the gallery did not adhere to this and the cress were simply disposed of, in response to which Petrič stated demonstrates, "[...] the difficulty of substituting the usual pragmatism for a (taxing?) ethic towards plants."[89] Kallergi indeed points out that one of the main difficulties bioart exhibits can face in a gallery or institution is that misunderstandings and failures to collaborate are likely to occur when dealing with living material, as it can be difficult for the artist to communicate a level of understanding and

[88] Ibid.
[89] Petrič, "The Conundrum of Plant-life", p.269.

agreement of what is required.[90] The cress, for instance, were not regarded in the non-anthropocentric way the artist intended. Reflecting back on Petrič's request that the cress be eaten, is this not a highly instrumental and anthropocentric motive? As we have already discussed our notions of plants as being rooted deeply in dualistic and Aristotelian perspectives of plants as non-sensorial 'automata' and passive entities has increasingly started to fade away. At the very least, we have become aware that plants are capable of communicating, learning and interacting with their surroundings in highly complex multispecies communities. Marder questions whether our reduction of plants for sustaining human consumption can indeed be an act of violence against vegetal being itself: "[...] after all, to eat a plant is to devour an intelligent, social, complex being."[91] One could argue that eating is unavoidably unethical, a 'violent' devouring of another being yet it is also a necessity for sustaining the lives of humans and nonhuman animals. However, ontologically speaking, the only reason we can even eat is due to existence or 'being' of plants thus, it can be that when we eat we actually eat *with* the plants or as Marder pointed out: "We imbibe their m-RNA which comes to regulate the expression of our own genes, and we think or will like them, adopt their will-to-power (*growth* in strength) as our own."[92] Eating the vegetal, at least in the case of edible plants, could then be one way in which to approach the end of an exhibition ethically.

However, it becomes clear that for vegetal ethics to arise we must have patience with vegetal time and be capable of germinating our own sense of 'plant-hood' – the exhibition space would have to be compatible with vegetal existence. The example of eating the vegetal after the exhibit is but one way of dissolving the humanist façade of ethics we are accustomed to within the spaces of art. We inherently take something of the vegetal into ourselves, which can direct us towards an abandonment of humanist values, to 'meet' vegetal-beings. Indeed, we should try to learn from and adapt to the challenges presented by plants in each particular situation (or exhibition in this case), rather than trying a one-size fits all method when the multiplicity and differences between plants are so vast. General de-contextualised ethical guidelines cannot be formed for vegetal beings, for they arguably do not respect the uniqueness of vegetal existence. Each species of

[90] Kallergi, "Bioart on Display", p.3.
[91] M. Marder, "Is It Ethical to Eat Plants?", *parallax,* 2013. Vol.19, No. 1, pp. 29-37, p.30.
[92] Ibid. p.33.

plant possesses its own temporality and "non-generalizable existential possibilities", which are important to consider.[93]

[93] Marder, "Is It Ethical To Eat Plants?", p. 36.

3. Intangible Processes and the Imperceptible: Manipulation and Deconstruction of the Vegetal-being

The two vital reference points of humanity, technology and vegetal life come together in this last chapter to look at our collaboration and encounters with vegetal-beings from a perspective we have thus far omitted from the discussion. The ways in which we can have non-anthropocentric encounters with plants have already been discussed from the perspective of a human surrendering to vegetal time within the artwork through performance and vegetalization, and aesthetics as a way of finding a non-violent approach through the work of Gessert. This chapter discusses two artworks involving uprooted trees and movement, albeit in *very* different ways. Firstly, the explicit use and involvement of interfaces within vegetal artworks or ways of 'translating' the inner most metabolic processes of plants needs some attention, for it cannot be ignored that interfaces have been, and still are, highly utilised by artists who seek to reveal these seemingly imperceptible processes within plants. To what extent do technological devices and interfaces emphasise and reveal those aspects of the vegetal being which are beyond our senses thus giving them an 'agency'? At which point does the perspective proposed by Petrič occur, that interfaces within artworks can hinder our experience with the vegetal, making it difficult to remain 'true to the plants' by further objectifying their position within the world?[94] The trouble with the translation of the vegetal is explored through Céleste Boursier-Mougenot's work *rêvolutions* (2015) and his use of technologies that translate the inner metabolic workings of the trees into movement through the space, communicating to us through sound and movement and how this can affect our encounter with plants. How does explicit motion affect our perception of the trees? Do the technological devices that the trees depend upon for the movement and perhaps even to stay alive become part of the trees themselves? If so, what is the plant life that emerges?

In the second part of this chapter, I look at an artwork that uses a more visceral and what is regarded as a destructive form of technology in the form of a digger and its uprooting of an olive tree in its vegetal landscape. Of course the digger's actions in the

[94] Petrič, "The Conundrum of Plant Life", p. 268.

performance are dictated by the artist working in symbiosis with the technology. This second part of the chapter will delve into the deconstruction of the vegetal landscape through which we can explore the contracts between humans and nonhumans by the artworks ability to draw focus to the marginalisation of the tree/vegetal life from the world. By examining *This Thin Crust of Earth* (2016), a video work by Janis Rafa in which a performance or documentation of the uprooting of a tree takes place. We can contemplate on the encounter between the human and nonhuman and what happens to the tree when its central point of reference is violently removed, preceded by its abrupt 'burial'. But is this action violent? The tree is transformed from a tangible point of reference to a non-dimensional point – discussed in posthuman terms the artwork can be argued as 'becoming-imperceptible', a point of non representation and a radical shift away from anthropocentric forms of relation and identification with the vegetal. Indeed, what if the deconstruction of the vegetal and its becoming-imperceptible within an artwork is a further way in which we can encounter plants from a post-anthropocentric perspective? I argue that to a certain extent the deconstruction of vegetal beings can open up new 'portals' through which to engage, removing the tightness of the system and welcoming multiple interpretations of vegetal life.

3.1 The Issue with Interfaces and the Translation of the Vegetal

The increasing collaboration of plants and technology in artworks, particularly devices measuring their inner processes or interfaces that allow humans to interact with plants, question the boundaries between nature and culture. In the anthropocentric sense, as discussed in depth throughout this research, nature is an outmoded concept that is of little use to us anymore when trying to reach post-anthropocentric encounters with plants. At first, I refer to the collaborative energies between plants and technology, as working in a symbiosis, rather than as a process of further reification of vegetal beings. How can interfaces or the combination of synthetic and plant life bring us to experience an encounter with the vegetal being and what can be revealed to us about their specific world? The artwork in question is Boursier-Mougenot's *rêvolutions*, which was commissioned for the French Pavilion at the Venice Biennale in 2015. Boursier-

Mougenot is a technologically oriented artist who uses computers, sound, animals and plants among other media within his work. With *rêvolutions* he tried to dissolve the boundaries between technology and 'nature', uprooting the trees to bring them into the exhibition space.

The most interesting debate that can stem from this artwork, however, is its contribution to our experience of vegetal-beings. The artist fitted three pine trees with technologies that converted or translated the inner metabolic processes taking place within the trees into tangible movement, visible at a human time scale. Two of the trees were located in the 'outdoor' grounds of the pavilion, while one was situated inside the pavilion, which was however exposed to the elements via an open ceiling (Fig. 7). At first it might appear as if the trees have their roots attached to large, *solid* mounds of soil (Fig. 8) which were attached to platforms with engines and wheels which enabled the trees to move about the space slowly, even fitted with motion sensor technologies that allowed them to sense obstacles.[95] The technological devices also emitted a gentle humming sound, which is congruent with the metabolic processes of the trees and their rustling through the space; the movement and the sounds effectively allow the human viewers to 'get inside' the skin of the trees and become part of the event. The human movement through the space, which is temporarily shared with trees in locomotion, also affects the speed and direction the trees take, arguably creating 'interactions' between the visitors and the trees. In fact, one could argue it is a type of dialogue that brings together separate beings – the trees, the humans and technology – uniting them in their diversity. It brings us to consider that there are many realities and many sensorial systems that interfaces or technologies can reveal to us. Gatti in 'The Technological Herbarium', states that through the bringing together of technology and plants in artworks we can see that they manage to interact and form collaborations, "[...] which flow into a singular unified composition played on reciprocal sustenance."[96] *Rêvolutions* can therefore be seen as a confirmation of this, in the way that the integration of technology extends the vegetal being to other living beings, in this case humans. Furthermore, the trees in the artwork are constantly

[95] U. Drees, "Biennale Venedig 2015: "Revolutions" von Celeste Boursier-Mougenot, Frankreich", *plusinsight,* 7 June 2015. http://plusinsight.de/2015/06/biennale-venedig-2015-revolutions-von-celeste-boursier-mougenot-frankreich/. (3 January 2016).
[96] Gatti, *The Technological Herbarium,* p.57.

responding to external sensations received and are in a continuous flux of movement, providing further ways to initiate encounters and act against the misunderstanding that plants are motionless or insensate beings. The ability of technologies, that are integrated within vegetal beings, to reveal inner processes that extend beyond our human senses and make them tangible play an important role in our attempts to encounter and collaborate with the vegetal. Do these techno-scientific life forms reveal to us or 'create' new types of vegetal being?

Yet, one begins to question where within this mass of roots and earth is there free space to fit all the technology, not to mention the computer that processes the metabolic signals? Boursier-Mougenot had in fact hollowed out the middle part of the earth mound to provide space for these devices, which produced some concerned reactions from visitors towards what appears to be a disregard of the traditionally regarded 'vital parts' (namely, the roots for example) through which the tree can communicate with its environment, perceive its location and take in nutrition etc.[97] Marder emphasises that plants occupy a unique position in that their subjectivity is not limited to one vital part but is non-localised, in the roots, leaves, flowers, shoots, which function separately and can be regenerated after 'amputation' from the rest of the plant for instance – plants are neither parts nor wholes, therefore the emphasis on each plant as a singular individual takes us back to anthropocentric understandings and normative philosophies.[98] However, vegetal ethical issues are never easily resolved, as discussed in chapter 2.2. Moving idly through the space, the trees in *rêvolutions* would sometimes advance faster when fewer obstacles were in the vicinity and slower when they detected something to be in the way, whether another tree or human. Even so, the obstacles were sensed by the sensors not the trees, and the tree was moving thanks to the wheels underneath which were controlled by an engine, therefore how valuable of an encounter with the actual 'alterity' of the vegetal could we really have? It might have felt as if the trees were approaching visitors, but in fact they may have been completely indifferent to the situation. Again, through this separation of beings we come to the seemingly inescapable point where just as we thought we could encounter the vegetal being, it slips out of reach. Artists working with

[97] Drees, "Biennale Venedig 2015".
[98] Marder, "Is It Ethical to Eat Plants?", p. 36.

interfaces, particularly ones that translate the inner processes of plants into sound or motion, cannot be certain about the exact origin of the signal processed by the interface.[99]

It is also worth asking how motion affects our perception of the trees? As mentioned in chapter 1, assigning movement such as locomotion to plants (in the case of *rêvolutions*, to pine trees) that do not usually possess such a mode of behaviour, can also degrade vegetal specific 'behaviours'. This directs us back to an anthropocentric understanding of plants again. Certainly, one can predict that the level of empathy towards them increases with movement and their arguably unsettling appearance in that they have been uprooted and removed from their 'vegetal landscape' (discussed further in chapter 3.2). Are the trees free to move throughout the space? To what extent is an uprooting of trees a violent act? Are the mounds of earth within which they are rooted properly and regularly irrigated? What happens to the trees after their show is over? The artist himself makes none of these aspects explicit, so we can but speculate. Undoubtedly, it is in these very questions emerging from the artwork that the problems in misinterpreting vegetal existence are situated. In *rêvolutions*, the interfaces arguably disturb the encounter between the human and vegetal, leading to our empathising with the plants. This ultimately makes it difficult for a collaboration to occur between the two species, for the vegetal becomes overshadowed by the technologies or interfaces. Petrič points out that:

> "When applying a machine to perceive the vivaciousness of plant life on our terms, beyond the long lost evolutionary connection, we are in essence interacting with an interface, an action so commonplace we hardly comprehend the materiality and proccesuality of the agency hiding behind the electrodes, computers and digital snapshots."[100]

But, how can it be that we disrespect the difference of the vegetal being through empathy? After all, empathy allows us to feel into the other or reach into their psychic interiority. Marder points out that an empathetic relation to plants is limiting, if we want to avoid anthropomorphisation, as it effectively reflects human values (or the empathiser)

[99] Petrič, "The Conundrum of Plant Life", p.268.
[100] Ibid.

onto the plant (empathised) and further objectifies the vegetal beings in question.[101] Thus, is *rêvolutions*, with its locomotive pine trees, contributing further to the anthropocentric view of plants?

It is also hard to ignore that in chapter 1.2 I proposed ways in which through art we can collaborate and join the time of plants without robbing them of their vegetal time. *Rêvolutions* does not fit in with that adjustment to rhythm, by accelerating vegetal movements to such a speed that they are overriding vegetal time. However, it does present an interesting debate for the use of technology within the vegetal 'body' itself, and here I leave the question suspended: Can technological devices or interfaces become part of the vegetal being?

3.2 Deconstruction of the Vegetal: Becoming-Imperceptible

In this last section, I look at how an artwork that provides both a representation and the ultimate 'disappearance' of the vegetal-being, and how the deconstruction of the vegetal landscape and the posthuman notion of becoming-imperceptible can attempt to bring us closer to an interconnectedness with vegetal beings that avoids anthropocentrism. These are explored through Janis Rafa's work *This Thin Crust of Earth* (2016, Fig. 9), in which an olive tree is uprooted or extracted by a modern agricultural machine (yellow digger) from its location in its 'vegetal landscape' (by which I mean the trees perceptual location, where it continued to grow) and is then buried under the earth in a different location to where it held its roots just hours before (Fig.10). The artwork itself is a 12-minute video work which should be watched in its entirety to get a sense of the acceleration of vegetal time and the tree's becoming-imperceptible that dominates the work (see: Janis Rafa, This Thin Crust of Earth, https://vimeo.com/181251633**)**. Rafa intends to explore the relations between humans and nonhumans from a non-anthropocentric perspective, looking specifically towards the ability of the artwork to

[101] M. Marder, "The Life of Plants and the Limits of Empathy", p.262.

draw focus to the marginalisation of the 'other'.[102] This is the perspective through which I explore the work, focusing on the marginalisation of vegetal life.

The juxtaposition of the serene Greek countryside, the crickets, bird song and the rumbling engine sounds of the digger create a seemingly antagonistic atmosphere at the beginning of the video, a disturbance of peace. At the opening scene we can observe an undulating landscape within which stands a lone olive tree, a digger approaches from a distance rumbling closer before starting its incessant digging of a hole in which the tree will ultimately be buried. Amid clouds of dust the tree's roots are extracted from the ground before proceeding with the burial – we are presented with a birds-eye view of the scene (Fig.11) just before the tree is covered up by soil, its representation is removed from the landscape and our view (Fig.12). As the video draws to a close, we are confronted with different angles of the place where the tree once stood. Instead we see the landscape as if the olive tree never even existed, or we have just witnessed its untimely death or a sacrifice. Indeed, this work points to the feeling we get in the face of a great loss, a death. Have we just witnessed a violent death? Was the tree dug back out of the ground and re-rooted at a later stage? Why does this uprooting disturb us so? It echoes anthropocentric human/plant relations that are agriculturally invested and instrumental, such as the conversion of plant habitats into agricultural land intended to grow crops for consequent human overconsumption. Matthew Hall points out that in instrumental human/plant 'relationships', for these are wholly anthropocentric, there is not only a conflict in human interests and plant needs but also we essentially rob them of their existence to live and thrive in this world just as other beings do.[103]

These are all immediate concerns that come to mind after viewing *This Thin Crust of Earth* but something points to a deeper post-anthropocentric encounter. However, in this situation where we witness the tree being buried alive, how easily can we rid ourselves of an anthropocentric bias? As it has been discussed, humans seem to possess a centre of existence from which they cannot help but fall into anthropocentric self-recognition and direct empathy towards other species. It is thus essential, in our quest to

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[102] "Janis Rafa - This Thin Crust of Earth, 3 Sep – 8 Oct 2016, Press Release", *Martin van Zomeren*, 2016. http://gmvz.com/?cat=show&obj=185&sub=descr. (10 December 2016).
[103] M. Hall, *Plants as Persons: A Philosophical Botany* (Albany: State University of New York Press, 2011), p. 163.

encounter and attempt at being-with the plants that we find a way to disrupt this reflection of ourselves in the vegetal especially when confronted with such an artwork that we might regard as a violent act on vegetal existence in this world. Marder proposes that the only way to do this is to attempt at a self-estrangement, "[...] whereby humans would no longer be able to recognise deficient versions of themselves in other kinds of creatures."[104] In order to do this we can think in terms of our own plant-hood, our invisible debt to plant life.

We have already discussed the idea that when the vegetal is removed from its milieu, a disturbance is caused in its perception of the world. The olive tree is effectively not removed entirely from its milieu, but buried back into it in its entirety. Does the tree recognise this location and can it still thrive here? Is it still able to perceive its habitat? How can we encounter it from this position if at all? Trewavas for instance states that through the constant engagement of plants with their environment, in which they essentially construct what humans call cognitive maps, they are able to detect the slightest changes in moisture and seek nutrient rich patches of earth, to name a few.[105] Marder has also proposed that, "[a] rooted mode of being and thinking is characterized by extreme attention to place and context of growth and, hence, sensitivity that at times exceeds that of animals."[106] Certainly, humans (and nonhuman animals) are not affected by a destruction of a place in the very core of their being (unless we are destroyed in the process) as our 'place' is transitory; we are not inseparable from our place of growth for example. However, the plant has over its lifetime created such a strong sense of the vegetal environment in which it has been rooted, a sensitivity that as humans we cannot relate to. If this immediate place were disturbed, would that not cause a destruction of the environment and ultimately the plant itself? In the case of the olive tree in *This Thin Crust of Earth*, does this reconfiguring of its habitat and destruction of its milieu not signify the end of its life? Indeed, from the above it appears we have started to contemplate or arguably even understand the specific place of plants however, we have to be careful to avoid our self-recognition in them or their place. We essentially cannot put

[104] Marder, "For a Phytocentrism to Come", *Environmental Philosophy,* May 2014. pp. 1-16, p.10.
[105] A. Trewavas, "Aspects of Plant Intelligence', *Annals of Botany,* Vol. 92, No. 1, July 2003. pp. 1-20, p. 16.
[106] Marder, "The Place of Plants", p. 191.

ourselves into such a position without anthropomorphising the vegetal. So, if we endeavour to keep the anonymity and boundlessness of the vegetal-being in tact, we can look to an artwork (namely, *This Thin Crust of Earth*), which removes the explicit representation of the vegetal (unlike Gessert and Petrič in their artworks) elevating it from an object of contemplation to one that is granted its anonymity and subjectivities.

Arguably, *This Thin Crust of Earth* seems to also question how a disruption of time, the early and accelerated 'death' of the tree can affect our perception of vegetal-beings, making us reflect upon the acceleration of the intensive agricultural industry for instance, or the way in which we can fall into a disregard for their unique vegetal time, as mentioned. Heidegger stressed for instance that we must come to accept that something of the plant's *being* will ultimately escape our reach and for this reason the human should avoid getting so close as to devour it completely.[107] As discussed, this notion proposes that for a successful encounter to occur between human and vegetal we must be capable of lingering in their time during which we will be granted a glimpse of their alterities of being. Again, as in *rêvolutions* in chapter 3.1, we see no attempt at a surrendering to vegetal time in *This Thin Crust of Earth* either. Marder has pointed out that lingering in the place or 'here' of the plant is highly difficult for humans to successfully achieve without thinking about the 'here' where we are not, or the 'over-there'.[108] However, this rules out vegetal-beings for it applies to human existence. How can we try to overcome this through the vegetal artwork? As already mentioned, the non-representation of the vegetal in an artwork opens a space where it releases itself from being an object of contemplation. The olive tree's burial marks a transgression over to the tree's journey to becoming-imperceptible. A term used by Braidotti, 'becoming-imperceptible', can take us in a direction towards an eradication of the idea of the individual self.[109] For instance, as already discussed in chapter 3.1, plants are neither parts nor wholes and each 'plant', in this case the olive tree, cannot be considered in terms of being a single individual. In *This Thin Crust of Earth* the buried olive tree can be regarded as reaching the moment of becoming-imperceptible; it has been released from its bounded self. The tree is

[107] M. Heidegger, *Being and Time,* Trans. by J. Macquarrie and E. Robinson (New York: Harper Collins, 1962), p. 138.
[108] M. Marder, "The Place of Plants", p.186.
[109] R.Braidotti, *The Posthuman,* (Cambridge: Polity Press, 2013)*,* p.137.

transformed from a three-dimensional vertical presence into a non-dimensional point. For us to not immediately think of being 'over-there', the non-presence, elimination of the image of the tree can serve the attempt at going beyond the individuated self, at avoiding the anthropocentric devouring of the tree as we get closer to it, for the tree is not there to devour anymore. The tree's non-presence is not a complete state of imperceptibility, but hints at leaving the bounded self to a becoming that is more interconnected with the multiplicity of nonhuman beings.[110] The future of the tree has become uncertain, de-familiarised. Braidotti explains that the non-representational event of 'becoming-imperceptible' exists, "[...] somewhere between the 'no longer' and the 'not yet', mixing past, present and future into the critical mass of an event."[111] In *This Thin Crust of Earth,* the explicit removal of representation and the becoming-imperceptible of the olive tree in its vegetal landscape points to a post-anthropocentric form of identification, in that through its de-familiarisation it departs from established anthropocentric thought. It is through this experience brought to us through the artwork that we can imagine nonhuman relations.

Another interesting aspect to briefly touch upon is the level of deconstruction present in the artwork, which brings one to consider the notion of deconstruction as put forward by Marder in *Plant-Thinking*, in the manner that deconstruction, "[...] permits us to focus on that which has been otherwise marginalized without converting the margin into a new center."[112] The deconstruction of the vegetal landscape and the tree's 'evacuation' from the tightness of the anthropocentric system (through the removal of its representation) is a sort of portal through which we can strive to join the vegetal being in solidarity, away from traditional notions. Rafa's artistic practice delves into the opening up of other worlds, where encounters and relations between humans and nonhumans can be explored. Her work can therefore be regarded as a flux in being, "somewhere between actuality and a personal perception of reality."[113] After all, attempting to create experiences of other worlds or imagining existence through other perspectives, in this case from that of the vegetal, are some of the main vocations pursued by art.

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[110] Ibid.
[111] Ibid.
[112] Marder, *Plant-thinking: A Philosophy of Vegetal Life* (New York: Columbia University Press, 2013), p.7.
[113] "Janis Rafa - This Thin Crust of Earth, 3 Sep – 8 Oct 2016, Press Release."

Conclusion

During the course of this research, I have explored the challenging encounters between vegetal-beings and humans, addressing these from a post-anthropocentric perspective. From the outset the focus has been to avoid our human tendency to become trapped in a negative anthropocentric loop when thinking about plants, which only results in their further objectification and separation from the world. Indeed, a move away from traditional perspectives on plants that are deeply rooted in metaphysics, which considers plants as simple and passive entities, can take us in the direction of accepting their 'otherness', preserving their alterities of being and maintaining their unique ways of accessing the world. The engagement of contemporary artists with plant life through the artworks discussed have attempted to bring forth the intrinsic worth of plants and their active participation in the world, ultimately, through a combination of plants, art and technology. Without this triangle of aspects I feel it would have been impossible to attempt at any kind of encounter, let alone conceive artistic collaborations between species. Technology played a role in its ability to go into the plant at a molecular level, as was the case with *rêvolutions,* granting us with insight into the inner processes and vitality of plants. Certainly, art was significantly important in this process as it helps to re-imagine and experience vegetal ways of existing.

An inquiry into a variety of different encounters with the vegetal unfolded, even though at first my intention was to use just a few case studies. The deeper I delved into the attempted encounters with plants, the more my curiosity (and confusion) grew and thus, expanding the scope of the types of encounters artists are trying to work with, seemed the most interesting direction to take in order to gain more understanding. In fact, the terrain is still uncertain and I certainly cannot conclude concretely on what happens during the encounters. All of the artists, excluding Rafa, were working with the vegetal-being in an attempt to create conditions where encounters could manifest themselves, some even trying to work at a vegetal pace (such as Petrič). Petrič attempted to establish an intercognition during *Skotopoesis* between species, Gessert worked in symbiosis as part of the living (vegetal) art system and as facilitator for the flowers artistic creations and, Boursier-Mougenot's trees worked in a symbiosis between plant and technology, translating to humans, intangible processes through visible locomotion. Despite these

forms of commitment to revealing the alterities of vegetal existence, the encounters were not wholly successful, failing mostly on the level of trying to remain non-anthropocentric. It would seem that it is exceedingly difficult, perhaps virtually impossible, to remain within this non-anthropocentric mind set. Even if we focus hard on suppressing anthropocentric ways of thinking, they unavoidably seep back into our lives. Yet, I feel a way to try to escape this traditional mind set was encountered through the notion of 'vegetalization' and the investigation into 'plant language'. In terms of surrendering to the different rhythm of plant-life, we also came to move away from our restricted notions of communication and language. I looked at how through changing our rhythm and deconstruction of language through poetry we might find the language of plants, in order to communicate with them without anthropomorphising. What was revealed was that in order to do this we must not only linger for a while, but should also try to change our understanding and use of language – for the language of plants exists in a different key.

Throughout, the human spectator often succumbs to projecting human values onto the plants within the artworks, specifically with regards to empathy. In *rêvolutions,* the movement of the trees triggered questions regarding their 'comfort', questioning whether their uprooting is a violent act or whether the technology is disturbing them, in the end reflecting human notions of discomfort. Indeed, in questions like these, the problems of misinterpreting vegetal existence situate themselves. Further, the interfaces in *rêvolutions* arguably make it difficult to encounter the vegetal-being at all, as they lead us to anthropomorphise plants. In *Skotopoesis,* Petrič specifically omitted the use of interfaces or technological devices that translate the inner processes for these very reasons. Yet, even this omission of technological interfaces did not remove all difficulties in encountering the vegetal. This brings me to reflect upon the question raised in chapter 3.1 – can technological devices or interfaces become part of the vegetal being? Through this research we have seen the emergence of semi-synthetic plants. In *rêvolutions* for instance, the technologies essentially became part of the vegetal through their integration into the plant body. Again supporting the notion proposed in this conclusion that we can only encounter the vegetal in this triangle of art, technology and plants.

The idea of vegetal art as a living system, proposed by Sommerer and Mignonneau, also inspired me to explore how bioart in particular, through its engagement with life forms and their processes, can attempt to eradicate the boundaries between a work of art and a work of nature. Artists creating these living systems also provide valuable insight into how we can encounter and collaborate with plants, working in a symbiosis with the plants rather than in an anthropocentric hierarchy. Gessert's hybrids followed this complex living system modality in the sense that both the nonhuman and 'human' parts are what make the art occur. However, his ultimate downfall in this encounter, again like the other artists, was his succumbing to anthropocentrism. Through his focus on the aesthetic dimension of plants as a way to cultivate more appreciation, and less violence towards the vegetal, and enhance their 'natural' aesthetic qualities, there are still the troublesome questions whether Gessert was emphasizing the plants' inner processes and intrinsic values or was he ultimately focused on what the plants gave to him as outputs.

Rafa's, *This Thin Crust of Earth,* pointed to an entirely different but significant way to encounter plants through a process of ultimate non-representation. So far, the artworks involved the visual representation of plants but I felt that there was still a need to deconstruct our encounter, to go beyond representation and beyond ourselves. 'Becoming-imperceptible' as a way to dissolve our anthropocentric grasp on plants – it is the ultimate deconstruction, the disappearance of the vegetal from our world. In fact, Petrič's request that the cress from *Skotopoesis* be consumed and the discussion surrounding the ethics of the consumption of the vegetal-being also draws us to another way of 'becoming-imperceptible' of the vegetal. The consumption of plants is perhaps another way of releasing and elevating the vegetal beyond our anthropocentric world. We conclusively end with nothing. This disappearance presents a way in which we can avoid such human self-recognition in the vegetal by removing their representation, releasing them from the tightness of the anthropocentric gaze and world. This non-representation in *This Thin Crust of Earth* elevated the tree from an object of contemplation to one that is granted its anonymity. I wanted to investigate how deconstructing our encounter might direct us towards thinking about a becoming that is more interconnected with the multiplicity of living-beings, by maintaining the foreignness of all.

The artworks discussed and the subsequent encounters, in spite of their failures, have helped us to speculate on questions that we might not have otherwise even considered, questions that have in places been intentionally left open for new pathways of research into these fascinating new engagements between humans and vegetal-beings. As pointed out at the beginning of this research, we need to imagine realities beyond our human centred perspectives of the world when we attempt to be with plants, without further reification of their existence, encountering them on their vegetal terms and temporalities. Moving beyond ourselves, or self-estrangement, and letting go of everything we are familiar with to learn from plants and perhaps even come to understand what plants are, is a long-term commitment to surrendering to the vegetal-being. In the words of Marder: "The greening of consciousness cannot proceed without a vegetalization of the phenomenological world."[114]

[114] Marder, "For a Phytocentrism to Come", p. 12.

List of Illustrations

Fig. 1. Špela Petrič, *Confronting Vegetal Otherness: Skotopoesis,* designed by Miha Turšič, Galerija Kapelica, Ljubljana, Slovenia, 2015.
Source: http://www.mediamatic.net/408809/en/vegetal-leather-and-miserable-machines

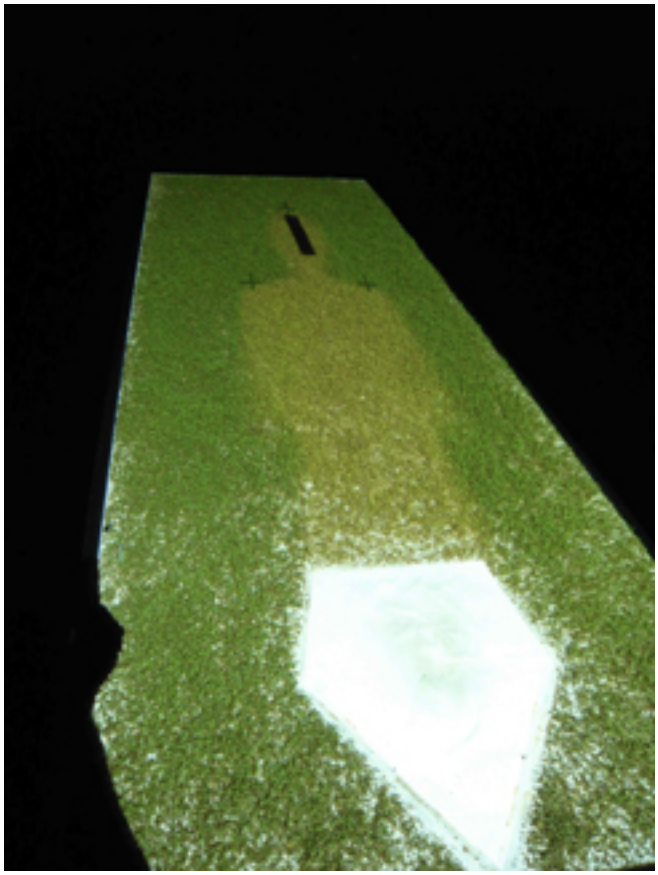

Fig. 2. Špela Petrič, resulting etiolation of the cress at the end of the 'intercognition' process, *Confronting Vegetal Otherness: Skotopoesis,* Galerija Kapelica, Ljubljana, Slovenia, 2015. Source: https://www.olats.org/trustme/journal.php

Fig. 3. Image top left to bottom right: 1. George Gessert, Hybrid 703. Pacifica iris, 1992. Flower 4.00" diameter. 2. George Gessert, Hybrid 768. Pacifica iris, 1994. Flower 3.9" diameter. 3. George Gessert, Hybrid 557. Pacifica iris, 1991. Flower 2.75" diameter. 4. George Gessert, Hybrid 898. Pacifica iris, 1995. Permission to reproduce this image has been kindly granted by George Gessert from 'Biomediale. Contemporary Society and Genomic Culture', edited by Dmitry Bulatov. The National Centre for Contemporary art (Kaliningrad branch, Russia), The National Publishing House 'Yantarny Skaz': Kaliningrad, 2004.
Source: L. Cinti, "The Sensorial Invisibility of Plants: An Interdisciplinary inquiry Through Bio Art and Plant Neurobiology", 2011, p. 77. http://discovery.ucl.ac.uk/1310152/. (3 January 2017)

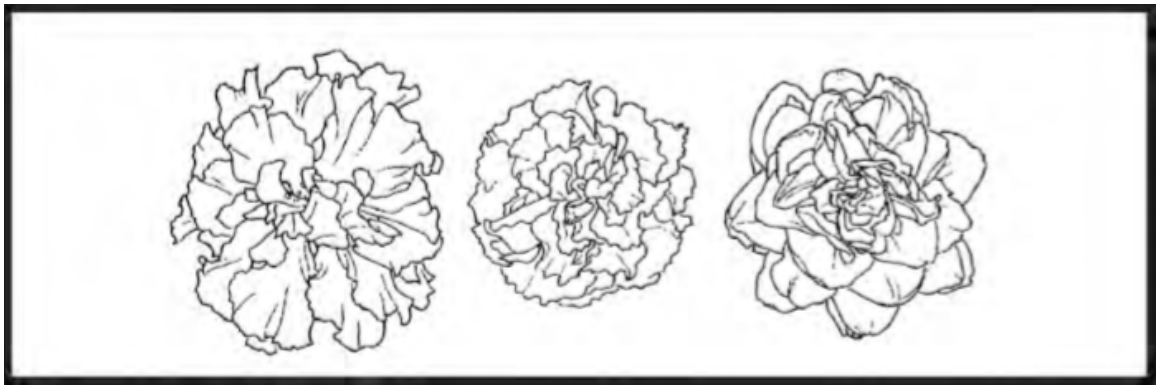

Fig. 4. George Gessert, Informal doubles. Left: hibiscus 'Jewel of India'. Centre: carnation 'Clarice.' Right daffodil 'Snowbird.' Permission to reproduce this image has been kindly granted by George Gessert.
Source: L. Cinti, "The Sensorial Invisibility of Plants: An Interdisciplinary inquiry Through Bio Art and Plant Neurobiology", 2011, p. 76. http://discovery.ucl.ac.uk/1310152/. (3 January 2017)

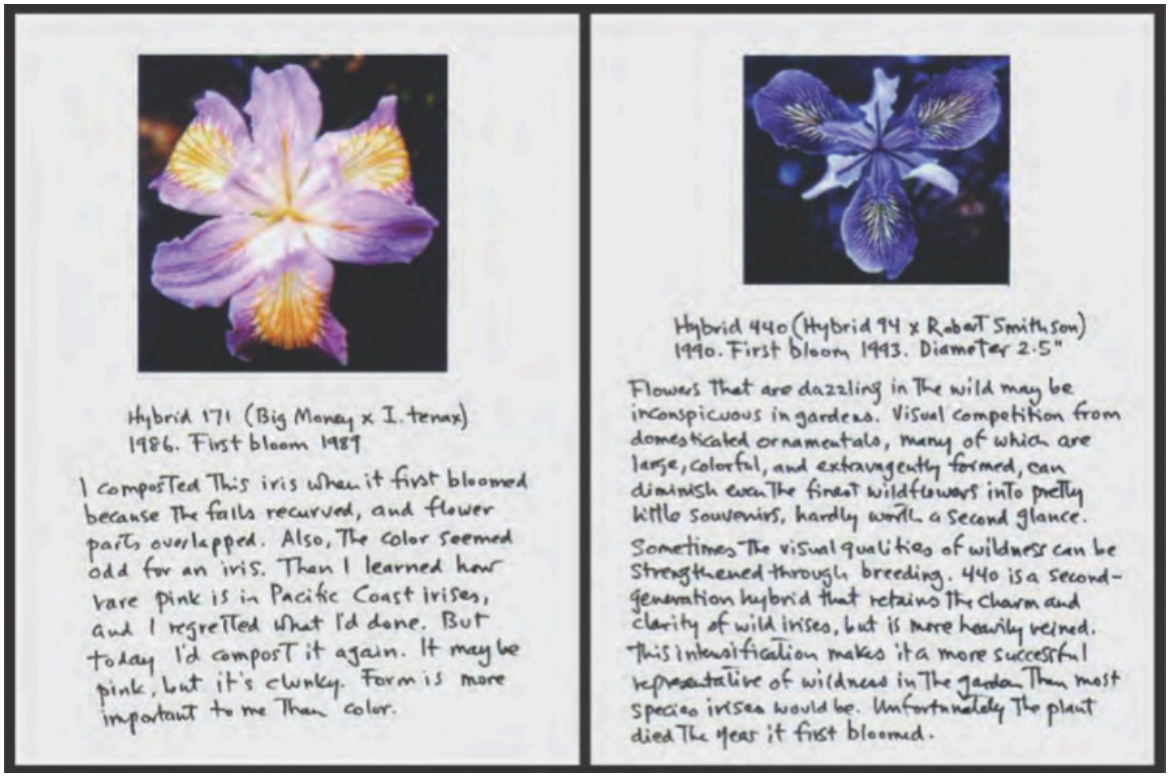

Fig. 5. George Gessert, pages of handwritten notes, colour photographs. Permission to reproduce this image has been kindly granted by George Gessert from 'Biomediale. Contemporary Society and Genomic Culture', edited by Dmitry Bulatov. The National Centre for Contemporary art (Kaliningrad branch, Russia), The National Publishing House 'Yantarny Skaz': Kaliningrad, 2004.
Source: L. Cinti, "The Sensorial Invisibility of Plants: An Interdisciplinary inquiry Through Bio Art and Plant Neurobiology", 2011, p. 81. http://discovery.ucl.ac.uk/1310152/. (3 January 2017)

Fig. 6. George Gessert, *Iris Project,* installation of 45 pots of hybrid Pacific Coast native irises tagged with breeding information for the Post Nature exhibition, New Langston Arts, San Francisco, approximately 15 x 8 x 1 ½ ft, 1988
Source: G. Gessert, "Notes on Genetic Art", *Leonardo,* Vol. 26, No. 3, 1993. p. 208.

Fig. 7. Céleste Boursier-Mougenot, *Rêvolutions,* Pine trees fitted with computer, engine, wheels, electrical nodes. French Pavilion at the 56th Venice Biennale, 2015. Image: © Alex Maguire/REX Shutte/SIPA. Source: http://culturebox.francetvinfo.fr/arts/peinture/la-56e-biennale-d-art-contemporain-de-venise-ouvre-samedi-218669

Fig. 8. Céleste Boursier-Mougenot, *Rêvolutions,* Pine trees fitted with computer, engine, wheels, electrical nodes. French Pavilion at the 56th Venice Biennale, 2015.
Source: http://www.china-art-management.com/blog/my-selection-of-venice-biennale-2015-national-pavilions/

Fig. 9. Janis Rafa, still taken from the video artwork *This Thin Crust of Earth,* 2016. Source: https://vimeo.com/181251633

Fig. 10. Janis Rafa, still taken from the video artwork *This Thin Crust of Earth,* 2016. Source: https://vimeo.com/181251633

Fig. 11. Janis Rafa, *This Thin Crust of Earth,* 2016.
Source: http://www.amsterdamart.com/event/this-thin-crust-of-earth-janis-rafa

Fig. 12. Janis Rafa, *This Thin Crust of Earth – from vertical to horizontal*, c-prints, 22.5 x 40 cm, 2016.
Source: http://www.janisrafailidou.co.uk/home/618644_this-thin-crust-of-earth-from-vertical-to-horizontal.html

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Declaration

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it contains no material previously published or produced by another party in fulfillment, partial or otherwise, of any other degree or diploma at another university or institute of higher learning, except where due acknowledgement is made in the text.

Melissa Lindqvist
15/01/17