

Pollinate/Illuminate

By

Marjan Verstappen

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Huntclub Gallery

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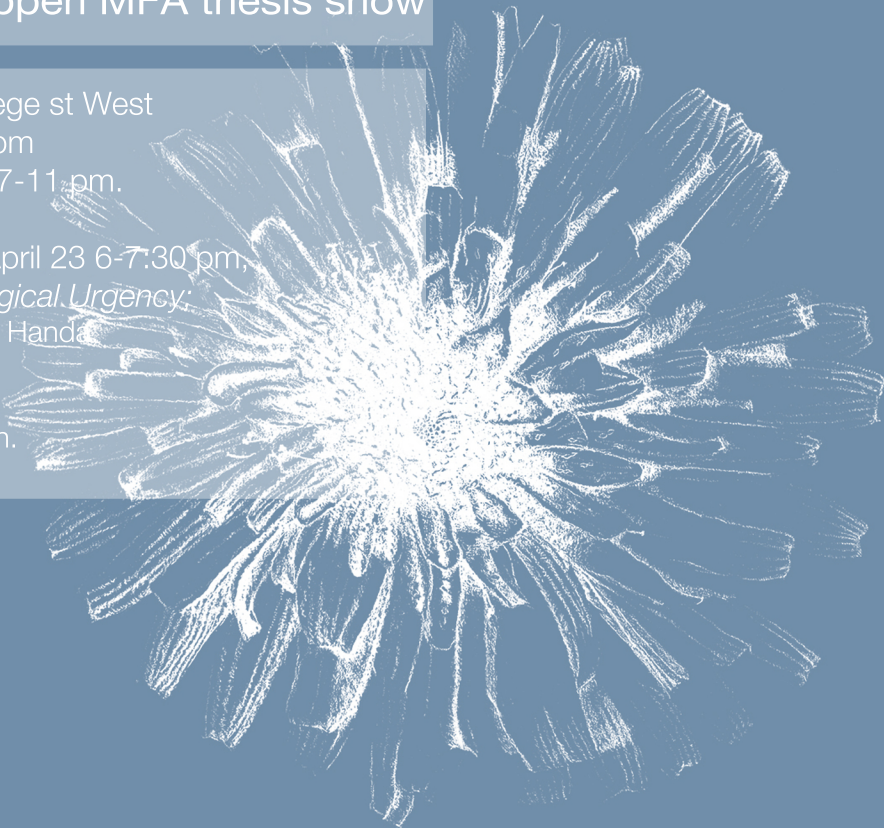
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Pollinate/Illuminate

Marjan Verstappen MFA thesis show

Huntclub: 709 College st West
April 17 - 29, 12-6 pm
Reception April 17, 7-11 pm.

Panel Discussion April 23 6-7:30 pm,
The Poetry of Ecological Urgency:
With: Aruna Antonella Handberg,
Aidan Dahlin Nolan,
Jonathan Groeneweg
and Kelsey Speakman.



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Abstract

Pollinate/Illuminate is a written paper and exhibition investigating the counterpoint of human, bee and plant sensory perception. Actuated by Karen Barad's and Donna Haraway's diffractive methodologies I argue that traditions of botanical illustration and taxonomy limit the possibilities by which humans imagine ecologically meshed relationships with bees. The artwork questions problematic values of control inherent in modern agricultural practices, especially monocultures. After initial experiments in immersive installation I make a series of 'deviant' botanical illustrations, critical of the Linnaean method of taxonomy to explore difference from within an epistemological system that negates it. These illustrations show a proliferation of different possibilities for ultraviolet vision, which is how bees see flowers. Bathed in UV light, the exhibition demonstrates the counterpoint of how plants, bees and humans respond differently to colour and light. By studying needs and desires across species *Pollinate/Illuminate* makes an argument for biodiversity that hums with possibility.

Acknowledgements

This undertaking would not have been possible without the generous support of many teachers, friends, classmates and family members. I would especially like to thank my academic advisors Paula Gardner and Simone Jones for their advice and dedication. I also extend this thanks to my professors in the graduate faculty at OCAD U; David Checcheto, Johanna Householder, Ian Carr-Harris, Barbara Rauch, Lynne Milgram, Paulette Phillips, Martha Ladley, and Michael Prokopow. Thanks to my MFA cohort, without your support I would be completely lost in the jungle. A special thanks to Jessica Vallentin Helen Yung, Lee Henderson, Ben Sloat, Jonathan Jong, Jack O'Sullivan and Han Zhang for your mentorship, you make me sharper and keener. Thanks, of course to my parents, for taking me camping and teaching me how to grow vegetables. Thank you for making me a good learner. And finally, thanks to Cordelia, my sister, roommate, and lifelong companion. I promise I will be better company now this is done.

To the gardeners in my life; Oma, mum, dad and Rory Harding.

May your flowerbeds always grow into forests.

Table of Contents

- 1. *Introduction***
- 2. *Uncommon Bedfellows; Diffractive Methods of Analysis*** 7
Diffractive Creativity: My Cat From Hell
Music, Sweetness, Ultraviolet Radiation
- 3. *Night Gardens: Experiments in Cross-Pollination*** 22
Scent Tunnels; Diffractive Investigations of Smell
- 4. *On Failure*** 39
Drawing Bee and Human Vision.
Seeing like a Bee
- 5. *Becoming Botanical*** 56
Classification
The Trap of Reflection
- 6. *Pollinate/Illuminate; Diffractive Reflection*** 59
- 7. *Bibliography*** 63

List of Figures

Figure 1 Audience member hurrying for her next flower. *Sexual Selection*, Nuit Blanche 2013. pp. 27

Figure 2 Exploring the park under near ultraviolet light. *Sexual Selection*, Nuit Blanche 2013. pp. 27

Figure 3 *Sexual Selection*, Nuit Blanche 2013. pp. 28

Figure 4 Handing out candy. *Sexual Selection*, Nuit Blanche 2013. pp. 28

Figure 5 *Scent Tunnels*, 2013. pp. 37

Figure 6 *Scent Tunnels*, from the inside, 2013. pp.37

Figure 7 *Scent Tunnels*, 2013. pp. 38

Figure 8 UV Image of Dandelion, 2014. pp. 38



Figure 1 Handing out candy. *Sexual Selection*, Nuit Blanche 2013.



Figure 2 Exploring the park under near ultraviolet light. *Sexual Selection*, Nuit Blanche 2013



Figure 3 *Sexual Selection*,
Nuit Blanche 2013.



Figure 4 Audience member hurrying for her
next flower. *Sexual Selection*, Nuit Blanche
2013



Figure 5 *Scent Tunnels* from the inside.



Figure 6 *Scent Tunnels 2013*.



Figure 7 *Scent Tunnels*, 2013.

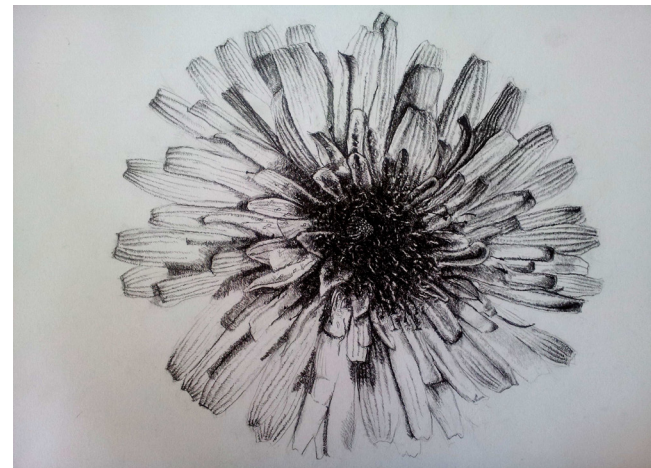


Figure 8 *UV Imaging of Dandelion*, 2014.

Introduction

In May 2012, the Globe and Mail published an article decrying the ban on cosmetic pesticides recently imposed in Ontario¹. The article explained that public parks were becoming “ruined with weeds” as dandelions, plantain, and other rogue plants encroached on the green expanses. This position invites many questions about how our influence on urban and rural ecosystems is affected by discourses of order and disorder. We prize wilderness in national parks and reserves, but deplore the same plants when they grow in our lawns. Why this inclination towards the monoculture, the “well-tended expanse of green?”² Most importantly, why the division between ‘wilderness’ and ‘agriculture’? Why are we so uncomfortable relinquishing control of our green spaces?

The clash between aesthetics and biodiversity is central to this thesis, which questions the apparent desire for humans to take control of the plants and animals in their environment, and the subsequent damage to biodiversity. It explores these issues of biodiversity through an analysis of agricultural practices and scientific illustration, and addresses them through sculpture, installation, and drawing. This thesis, and the corresponding exhibition is not environmental activism or ‘eco-art’; it does not cajole audiences into riding

¹ Gee: 2012

² Gee

bicycles or recycling, it is the purpose of this project to inspire and intrigue audiences, and to give them new perspectives on the ‘ugly’ plants and animals with which we share our city. Along with this paper, research has taken shape in the form of art installations and botanical illustrations. These works align the desires of my audience with the desires of our ‘ecological bedfellows’ as a way of showing urban ecological interactions as a meshwork of sensual attraction. This paper and exhibition address the unfathomable complexity of these interactions, not by making generalizations, but paying close attention to texture and detail. I use Donna Haraway’s diffraction as a critical kaleidoscope to help me see infinite variation in comparisons. In this context, diffraction is particularly useful because it searches for difference as well as similarity in its analysis, avoiding the reproduction of ill-fitting metaphors implied by reflexive analysis. Reflections often support tautologies. This paper performs a critique of Linnaean traditions of botanical illustration as a method of ‘identifying’ plants by forcing them to conform to arbitrary categories that have no relation to a cultural or ecological context. The final exhibition adopts the conventions of botanical illustration to show the incompleteness of our ecological experience. Instead of assuming the God’s-eye-view over a system, diffraction attempts to feel these relations out from the inside by studying differences instead of ignoring them. In studying the aesthetic preferences of humans, bees and dandelions I locate insurmountable differences in sensual experience. This research began by seeking a sense of what it was like to crave blood

like a bedbug, or sugar like a bee. Embracing the impossibility of accessing the experience of these creatures, I make drawings that extend the possibilities of human vision by helping us imagine colours we cannot see and helping us imagine the possibilities beyond the limits of our sight. Along the way, I find unique perspectives on our everyday surroundings, and question how we define and defend our territory against 'invasive' urban species. How do we understand complex ecological systems through a study that seeks difference? Where are the limits of our sensory perception?

Growing up at the foot of the Southern Alps of New Zealand³ I witnessed the daily battle to hold back wilderness from farmland - a feud between native forest and introduced domestic plants.⁴ In the last year of my BFA, this narrative of 'weeds' and 'crops', 'wilderness' and 'agriculture' fractured my long-held understandings of food production that I had not previously questioned. For some time, my roommate and I had been struggling in our garden with an irrepressible patch of dock leaves that were continuously choking

³ A landscape you may recognize as the kingdom of Rohan from the Lord of the Rings Trilogy.

⁴ New Zealand is ecologically distinct for several reasons: it split off early from Gondwanaland with no native mammals aboard. New Zealand can still be considered a (very fragile) primordial wilderness until the 15th, when it was finally colonized by ancestors of the Maori. When European settlers arrived they did not consider native plants fit for cultivation and imported entire ecosystems from Europe en masse, this meant draining wetlands, burning forests, introducing mammals and changing the courses of rivers to conform to their traditions of farming. This history of eco/biological colonization makes the difference between wild and domesticated territories particularly distinct in New Zealand.

our carrots. Until some friends told us that dock leaves made a rather tasty pesto, and had a higher nutritional value than the carrots we were trying to grow. After cultivating dock patches for some time, we discovered that our blackberries and tomatoes grew larger and healthier when buried under a forest of weeds. At this point, we stopped 'gardening' and started watching. Our ideas of 'wild' and 'cultivated' assumed new meaning as the diffraction took place. A fascinating entanglement of (predominantly edible) plants grew. The number of birds and insects increased exponentially, plants arranged themselves into niches; environments where they supported each other. Native seedlings from seeds dormant in the soil for years began to sprout under the heavy blankets of blackberry vines. After further research, my roommate and I found our technique was similar to permaculture, an experimental method of gardening developed in the mid 1970's by an Australian called Bill Mollison. Mollison's permaculture is simple; do as little as possible, observe how things arrange themselves, find ways to use things that grow in abundance. Our diffraction produced delicious results such as dock leaf pesto with wild garlic, olive oil, and walnuts.

If you give wilderness a chance, it will take root. When we build urban spaces we expect the forests we cut down and the rivers we bury to be gone forever, but these ecosystems have a legacy that seeps through the cracks in the concrete and the maintenance schedule in parks. Our cityscapes are sites of continuous

ecological negotiation. We have created the conditions for phenomenally complex, vibrant ecosystems. Diffractive analysis of desire in urban species provides a method of learning and making that can show the wonderful complex and non-human properties of our everyday surroundings. This project searches for Toronto-dwelling species whose existence presents itself in counterpoint to human activity, sometimes complementing our needs, sometimes confounding our desires, often misjudged, sometimes understandably hated. Throughout this research period, many plants and animals have been studied, but this thesis investigation sharpens its focus around the differences between bee and human vision as a way of exploring interspecies connections and contrasts. I have studied these plants and animals through their interaction with us, and, when appropriate, through their interaction with each other.

Uncommon Bedfellows; Diffractive Methods of Analysis

The story is told by the same story. The object studied and the method of study mine each other. The analyst and the analysed all do the same thing.⁵

Donna Haraway *Modest Witness @ second millennium.*

Although I care deeply about issues of biodiversity I have avoided an activist stance in order to situate my research in a less didactic context that fosters fine detail and complex nuances over a straightforward political message. As a human living in Toronto in 2014, I simultaneously love and harm the systems of life that support me. At some level, most of us struggle with this cognitive dissonance. This research speaks from the position embracing this contradiction. It would be dishonest to tell my audience to give up flying and only buy second-hand items; art is not sincere when it is trying to change your habits, but it can show the limits of your vision and help you see beyond them. In doing so, I position my project as stimulating artwork rather than stimulating education. This stance makes it possible to locate humans, including myself, as participants in an ecosystem, rather than outsiders who take a passing interest. These intricacies are important for a project that casts a critical eye over epistemological methods that seek sameness in the object

⁵ Haraway 1997: 34

of study and the method of study. Such practices, for example, might claim exhaustive knowledge of plants by the tally of their stamens and their categorization through taxonomy. I seek to undo these categories and the images that support them by studying flowers through the eyes of a bee. This art project seeks difference as a unique way of finding out about the world.

Here, I draw my position from Donna Haraway, who first characterized diffraction as a method of analysis within feminist thought: that subverts the metaphor of ‘reflection’, which she considers the prevalent mode of analysis within western academic thought.

Reflexivity has been much recommended as a critical practice but my suspicion is that reflexivity, like reflection, only displaces the same elsewhere, setting up worries about copy and original and the search for the authentic and really real. Reflexivity is a bad trope for escaping the false choice between realism and relativism in thinking about strong objectivity and situated knowledges in technoscientific knowledge.⁶

In “displacing the same elsewhere,”⁷ Haraway takes issue with reflection because, in seeking sameness, it negates the subtlety and complexity of difference. Difference for Haraway predominantly means difference in gender. Through this lens of difference she conducts a feminist critique of early 18th century scientific

⁶ Haraway, 16.

⁷ Haraway, 14.

discourses, where she argues that the beginning of reflexive methods also excluded women from scientific practices.⁸ Instead of emphasizing opposites and remaining within tautological systems of making knowledge, Haraway views an exploration of difference as an exploration of crossovers and mixes. Using Haraway's method of critique this paper analyzes the trajectory of modern agricultural methods by studying how the discourse excludes weeds, insects and ecological diversity. In her diffractive analysis, Haraway tells the story of the relationship between rats and humans; from the ships of 15th century explorers to viruses in research labs. Together with rats, humans have explored new frontiers. This shared history is expressed biologically in mutants like the bubonic plague, and in fleas, that do not distinguish between rats and humans.⁹ In this respect, the narrative of scientific testing and experimentation can be viewed has a history of becoming-rat, and rat-becoming-human.

My analysis of bees is also a study suggestive of difference, but it focuses on difference in colour perception in pollinating insects as a way of arguing for different considerations of botanical 'types' as systems of taxonomy. Bees are a central character in our dominant western narrative of agricultural practices, and our

⁸ Haraway, 24

⁹ Except, in the case of fleas, perhaps in flavour.

historic practice of conquest of new lands through plow and sickle. Like our relationship with the rat, human-bee relations are based on mutual desires, and sensual appreciations. We both crave sweetness, and find sugars in abundance when we aid the bee in its search. A reflexive analysis would not be able to tell the story of this relationship from so many perspectives because it would have to reflect the information back into the assumptions of its own discipline. Diffraction assumes that no discipline has the authority to create impervious 'truths.' To analyze the assumptions through which 'truth' is created, diffraction studies what is excluded from a discourse and then asks what is a stake in the exclusion. In this respect diffraction is critical of disciplinarity. Haraway recognizes that, in the 18th century, the new scientific institutions assumed that women were not fit to take part in scientific discourses. I identify that the way we study nature excludes the perspective of bees, and question whether this exclusion creates worthwhile knowledge.

Haraway describes diffraction most poetically as a game of Cat's Cradle.¹⁰ A challenging game of co-creation, Cat Cradle is a game of knots and patterns. While it can be played alone, all of the many surprising variations cannot be achieved without at least a second pair of hands. Most significantly for Haraway, impetus of Cat's Cradle is the captivating difference created by the hands of the players, where:

¹⁰ Haraway, 268

One does not win at Cat's Cradle; the goal is more interesting and open-ended than that. It is not always possible to repeat interesting patterns, and figuring out what happened to result in intriguing patterns is an embodied analytical skill¹¹

Together with bees, and rats, humans share difference with a multitude of plants and animals. Together we play this game of knotting and weaving patterns. We reproduce these patterns of difference and similarity in our biology, our habits of growing food, eating, and cleaning up after ourselves.

Karen Barad also studies difference to perform a feminist/social critique of the sciences. Inspired by her research as a particle physicist, Barad's diffraction is similar to Haraway's; it is critical of reflection around scientific practices that rely unquestioningly on pre existing dichotomies such as words and things, subject and object, natural and cultural.¹² In this respect, "creating the same elsewhere" constitutes a knowledge creation process within an epistemological system that is not self-critical. For instance, if a scientist performs experiments assuming the existence of a nature-culture binary, she is only going to find more data that supports a nature-culture binary. Barad makes the point that within reflexive discourses, accepted demarcations between ethics, ontology and epistemology make criticism on reflexivity scarce. As a result,

¹¹ Haraway, 268

¹² Barad 2007: 89

researchers accept their position as observers outside of the experiment and the public thus assumes that the ‘frame’ used by scientists to create knowledge is the appropriate one. Barad draws her examples from particle physics, where she describes how interference from measuring equipment makes it difficult for scientists to discern whether quantum matter behaves like a particle or a wave. Barad argues that the answer should be both, because the equipment the scientist is using creates the conditions for the experiment, and subsequently the effects produced from it. Barad proposes “ethico-onto-epistemology”¹³; a conglomerate way of criticizing, knowing and being. This method attends to fine detail that situates researcher, measuring equipment and the phenomena being measured in a milieu that makes it impossible to ignore their impact upon each other. Instead of adhering to binaries that erase the presence of equipment and researcher, claiming that the phenomena can be measured in a vacuum Barad sees the relationship between these elements as one of imbalanced power that privileges the scientist. Barad considers making knowledge as making “worldly configurations” that carefully consider the *way* of knowing and engaging materially with the world. In other words, a ‘worldly configuration’ is a way of knowing bee-human-plant relations as a way of finding ecological equilibrium.

¹³ Barad, 90

The relationship between reflection and diffraction is complex because they cannot be seen in opposition to each other. To completely affirm diffraction and negate reflection is a fallacy because it requires describing them as polar opposite, incompatible methods, which they are not. It requires a cognitive dissonance similar to those who print flyers on non-recycled paper urging us to 'save energy.' Although diffraction is critical of many reflexive practices, it also contains reflexive positions. The difference lies in how each system approaches complexity and detail. A reflexive argument ignores 'unnecessary detail', incongruous results, and any information that could potentially weaken similarities between two objects. Whereas diffraction values incongruities because they offer opportunities to study points where things interact. As such, diffractive methods reveal the assumptions of the argument. Certainly any argument, and any system, for creating new knowledge relies on a series of assumptions. Both diffraction and reflexivity rely on a constructed set of assumptions, but reflexivity denies any information that challenges the assumptions it privileges. In contrast, a project employing diffractive practice engages analysis, but then studies the details that inevitably arise to take a position critical of the project's own assumptions. From here, perspectives arise, containing new sets of assumptions, ad infinitum. In this respect, diffraction favours what Deleuze and Guattari would describe as rhizome-thought.¹⁴ Diffraction then creates a proliferation of arguments, and

¹⁴ Gilles Deleuze and Feilz Guttari 1993 :16

then takes a line of flight from them, turning back on the assumptions of the epistemological system they were created in.

This paper is full of reflections as well as diffractions. A diffractive analysis can begin with a reflective argument, and turn it into a proliferation of different perspectives. This research views Linnaean Botanical Illustration as typical of reflexive analysis. Widely used in the 18th century as method for identifying new species, the Linnaean method transplants botanical data from a native habitat and forces it to conform to a system of knowing that does not account for difference of place, use, or people. This exhibition delegitimizes the authority of the Linnaean method to create a multiplicity of possible viewpoints of botanical ‘types’.

Later, this paper will discuss the tensions between a taxonomic-horticultural view and the non-linear logic of permaculture in order to more fully understand the implications of the Linnaean method.

Diffraction has many points of contact with Deleuze and Guattari’s notion of *becoming-animal*. According to Deleuze and Guattari, as a study of difference, becoming-animal (their term) is a line of flight (a tangent or variation) of Oedipal forms of analysis that focus a *subject* and an *object*, but not a multiplicity.¹⁵ Similar to Barad’s and Haraway’s criticism of reflection Deleuze and Guattari are critical of ‘Oedipal’ forms of analysis

¹⁵ Deleuze and Guattari, 233

because they create binaries that negate complex relationships of similarity and difference. Deleuze and Guattari describe subjectivity as a perpetual state of becoming- meaning that we are never ‘complete’ (physically, mentally, or otherwise) but always configuring with the world in different ways. Contact with other modes of being, whether human, animal, vegetable or mineral constantly alters our own perception of ourselves. Through this negation of fixed identity, becoming undoes modes of classification developed by natural history. Contrary to seeing individual species, Deleuze and Guattari describe ‘blocks’ of becoming, such as the type-C virus that indicates as a site of horizontal evolutionary becoming between cat and baboon¹⁶. The ‘block’ is a way of framing an interspecies connection that exceeds the boundaries normally placed on them by scientific discourses. This move is not dissimilar to Haraway’s characterization of human-rat relations as an exploration of frontiers; in scientific experiment, for example, the body of the lab rat becomes a site of discovery, whereas the ship rat becomes a method of ecological colonization.¹⁷ Sometimes our interactions with other creatures are more than the reflection of ourselves elsewhere; they can be expressions of something from the creature that is affecting us. This is when we are thrown into a becoming. This can be observed at the park, where adult humans are immersed in becoming-dog and becoming-child.

¹⁶ Deleuze and Guattari: 238

¹⁷The original stowaways, ship rats swim ashore at every opportunity, making them the first animals introduced by Western explorers.

Different from seeing yourself reflected in your dog/child, becoming makes you forget yourself in a milieu that chases, barks and growls, that screams with joy and fear when sliding down the slide, which demands ice cream. That is to say, becoming is not a resemblance, or an imitation, and neither is it a progression, recession, or an imaginary process. It is a way of placing ourselves within a different milieu to explore, and saying ‘my selfhood is never my own, because I allow myself to be thrown into continual process of becoming, I am many.’ The study of desire between urban species through the lens of diffraction is a study in of humans in becoming-ant, becoming-bee, becoming-dandelion.

Deleuze and Guattari’s delineation of ‘blocks’ and ‘sites’ of becoming ¹⁸ is interpreted by Elizabeth Grosz as an opportunity to analyze art as an expression of sensation, territory, and becoming within this milieu.¹⁹ If we recognize that we impact things beyond the limits of our own bodies, then perhaps an equally valid method of inquiry is not to study the individual bodies, but their impacts within the milieu. In this respect, Grosz sees art as an expression of sensory delight from a particular territory in a milieu. Not every creature in the world senses things the same way. In describing sensation as territory, Grosz portrays art as an expression of what humans can sense – that is, as a depiction of human territory. Humans enjoy shades of

¹⁸ As an alternative to classification by species.

¹⁹ Grosz 2008: 16

red, yellow and orange, which are impossible for bees to see. Cats run and hide at the sound of a saxophone. Uncontroversially, human art is an expression of what humans in a certain culture find beautiful. In saying this, every variation of what is considered beautiful is a deterritorialization and a re-territorialization of the limits of human cultural territory. In this respect, Grosz situates art, not simply as an expression of an animal past, but “the transformation of the materials from the past into resources for the future... sensations unavailable now but to be unleashed in the future on a people ready to perceive and be affected by them.”²⁰ In saying this, Grosz is arguing that processes of art making are linked to processes of becoming, that further the implications of our bodies and what we can sense. Through this becoming we extend our ability to experience the world. By looking at a colour field painting, for example, we extend our knowledge of the relationship between colour, light and space. Grosz sees art as knots of sensation, and every new piece of art is an adjustment of territory within the milieu, an adjustment that can aid us in our territorial negotiations with bees and other pollinating insects. By incorporating the possibility of animal aesthetic appreciation into my work, I argue for more careful consideration of territory.

Many animals and insects have a much stronger appreciation for smell than humans. This research explores

²⁰ Grosz: 103

the diffractive possibilities in the use of synthetic smells in public places, and animal/plant use of scent as a territorial demarcation.²¹ For Grosz, artistic disciplines frame chaotic sensation, and grasp for the limits of sensory perception. “... the arts frame and or compose chaos so that sensation can be created and proliferate.”²² By this, Grosz means that art creates and proliferation of different frames for different sensations, like hip hop, impressionist painting and interpretive dance. By showing the limits of human vision, it is the goal of this project to show the edge of the human sensory frame, how this sensory frame overlaps with a bee’s.

This project’s interest in locating a counterpoint between human and animal behaviour can be identified in instances of human/plant/animal interaction in domestic spaces. The human-rat-flea-bubonic plague or the human-bee-apple tree offer counterpoints to each other. In this context, I re-define the city, with its parks, malls, streets, subways and apartment buildings as one big domestic space in which we can study counterpoint to consider the overlapping frames of sensation that are experienced by humans and animals.

²¹ Many flowers express their proximity by releasing scent which is attractive to pollinating insects, this is an expression of territory that instills a craving, but also promises fulfillment. In subtle ways, we also express territory through smell: shopping mall food courts use artificial smells of coffee and cinnamon to incite hunger and comfort in shoppers. This territorial tactic makes visitors to the mall comfortable and relaxed. We want to stay, and spend money, we associate these smells with consumption and homeliness, which means we associate happy memories with being at the mall.

²² Grosz: 28

Completely altered, but not completely controlled by humans, studying interactions in urban ecology emphasizes the problematic nature/culture divide defined earlier, and undermined by diffractive analysis. By arguing for diffraction, or becoming, or sensory territory, Haraway, Barad, Grosz and, Deleuze and Guattari call for a new way of looking at the world that exceeds conventionally accepted boundaries of gender, matter and species. To do this they search for new counterpoints that they describe as blocks of becoming, or a milieu or a frame. This project answers this call by studying counterpoints of human-insect behaviour and making art that touches the limits of human experience.

Diffractional Creativity: My Cat From Hell

The Animal Planet television show, *My Cat From Hell* explores human-cat relationships, shows how diffraction is common in everyday urban settings and demonstrates how it is used as a tool to practice criticism and creativity. Cat 'behaviourist' Jackson Galaxy finds solutions for the strained home life of couples due to their feline family members. Galaxy observes the behavioural dynamics of each household and then intervenes. Solutions often include: providing high spaces where cats can comfortably observe the room while feeling safe, or removal of low-level hiding places where nervous cats can become cornered when they feel unsafe. In one episode, an aerosol can detecting motion is placed outside a bedroom door. The cat meowing outside the door all night is warded off from the territory by a blast of air in the face.

Within this banal portrayal of urban pet-keeping *My Cat From Hell* captures a shard of becoming-animal that is remarkably difficult to find in other aspects of western culture. In this series, humans work to understand the needs and desires of another species, humans are willing to compromise their territory and curb their own behaviour in order to accommodate a fellow species, humans make allowances for dangerous and antisocial behaviour in a different species. *My Cat From Hell* uses a practice resembling diffractional analysis to study territory and behaviour with the goal of making a domestic human space more amenable to cats. Rather than changing the cat's behaviour, *My Cat From Hell* aims to create a more harmonious

blending of human and cat needs. These negotiations of domestic life are diffractive in that they attempt to account for the differences in all parties and find ways of meshing human and animal need. In *My Cat From Hell* no one is bad or good, everyone is stressed, and it is Galaxy's job to overcome the barriers that stand in the way of a harmonious relationship. Because I aim to make artwork based on analysis of animal and plant behaviour, *My Cat From Hell* is important because it presents a stand-alone example of how diffractive negotiation can be achieved in domestic spaces that are built to privilege human experience.

Music, Sweetness, Ultraviolet Radiation

And then into this great dance of plants and pollinators step us, compounding the meanings of flowers beyond all reason, turning their sexual organs into tropes of their own (and of so much else), drawing and driving the evolution of flowers toward the extraordinary, freakish, and precarious beauty of a Madame Hardy rose or a Semper Augustus tulip.²³

Michael Pollan

The wild night garden is a site of sexual desire and excitement for humans, plants and insects. The creative force of sexual desire is taken up from Darwin's theory of sexual selection. According to Deleuze and Guattari:

We know nothing about the body until we know what it can do, in other words, what it's affects are, how they can or cannot enter into composition with other affects, with the affects of another body, either to destroy that body or to be destroyed by it, either to exchange actions and passions with it or to join with it composing a more powerful body.²⁴

This space meshes the desires of insects, humans and plants, to throw human viewers into a practice of becoming by giving us a sense of what it might be like to desire like a bee, or even a like plant. 'Desire' is considered here in the broadest way possible; in the sense that every living thing on earth desires to survive

²³ Pollan 2002: 77.

²⁴ Deleuze and Guattari, 257.

and proliferate (or, in the case of humans, at least desire their species to proliferate.) In this sense, a plant's desire for proliferation can be aided by human and animal attraction, selecting certain aesthetic qualities while discarding others. Within this context, it is possible to imagine plants harbouring a certain sexual 'desire' for a pollinator. Far from wishing to anthropomorphize plant behaviour, this description of desire de-emphasizes the role that gender plays in the sexual relationship between plants and insects. It is important to remember that 'sexual intercourse' in the mammalian sense is only one way to reproduce. There are others ways: pollination, where another species is involved; and asexual reproduction, where in the case of plants, the parent grows rhizomes that become other plants. Thus, this research is also concerned with how humans and insects are attracted to the colour, pattern, smells and shapes of flowers, which appear to play their own flirtatious games, and increase their chances at proliferation by being protected and encouraged to multiply in gardens all over the world. Gardens are a fascinating site of shared desire between humans, plants and animals. Curated by humans, who mostly select plants for aesthetic reasons (the look, taste or smell of the plant) we can claim only partial responsibility for the flourishing of the garden, which through the lens of permaculture the garden should be considered a collaboration between insects, animals, neighbouring plants, the weather, certain diseases, etc. My first projects took an interest in night gardens as a metaphor for cross-species desire. Apart from being an interspecies collaboration of sex, night gardens

have a certain mystique in many cultures as being a site of enigmatic, if not outright forbidden sexual liaisons. As sites of collaboration and sexual liaison the nighttime garden is a site of diffraction a site wherein, to echo Grosz, frames and territories can be transgressed. As such, I chose a public park as an appropriate setting for an art piece about cross-pollinating sex and desire. Flower species are also a site of diffraction between human and insect experience, because they have evolved bright colours symmetrical shapes and sweet flavours to attract pollinators. Flowers are also attractive to humans for many of the same reasons, so much so that human desire has made humans behave as pollinators of our favourite plants. Human desire is so similar to insect desire, that we have in fact become pollinators, aiding their desire for infinite proliferation we have spread them around the world. What would the rose, or the tulip, or the daffodil look like today without human interference? This innate attraction is also evident in the fashion industry and decorative arts, where colour, pattern and scent are inspired by our relationship with flowers. Making art about how flowers look to bees recognizes this similarity in attraction, or as Grosz would say, this overlap in territory.

While considering this relationship, I found a difference that was worth further exploration; most pollinating insects see a greater part of the UV spectrum, which means that flowers appear very different to them. For instance, to a bee, wasp or moth, dandelions are patterned, with an intense ultraviolet in the center, fading to

blue or green. To pollinating insects, patterns and colour on petals give instructions on where to land and how to find nectar. What is interesting about these instructions for insects is that we are also attracted to the same flowers, regardless of the difference in visible colour spectrum between pollinating insects and humans. The story of this attraction, and how it has contributed to the enormous cultural discourse concerning flowers and flower cultivation is an alluring example I can engage to understand our relationship to plants and insects. I see these markings as a metaphor for cross-species communication, where plants send out a signal to pollinators, which also includes humans. Although we are tuned to a different frequency; we can see the red spectrum instead of ultraviolet, but we still find flowers attractive.

Night Gardens: Experiments in Cross-Pollination

In the brownish night of the Grange Park, the ultraviolet flashlights beautifully illuminated the fluorescent flowers hidden in the bushes. Holding the especially adapted flashlights, children and grownups flitted around the park, exclaiming with wonder when they discovered a flower. Hidden to the naked eye, the exhibition was only visible to those holding the flashlights; a delightful, secret experience in the middle of the LED spectacle of Nuit Blanche. Would-be audience members were drawn to the darkest corner of the park by dance music, an appropriate choice because of its use in our own mating rituals, and a springtime smell in

the air that was incongruous with the season. Here they collected their flashlights and followed a trail of flowers. Like a bee using ultraviolet signals to satisfy their sugar cravings, audience members were rewarded with candy when they returned their flashlights at the end of the trail. Smell the perfume, find the flowers, follow intense colours to the sweet spot, reap the sugary reward. Hunting through a garden with smell and ultraviolet light, merges our desires with the desire of insects and flowers. An experience otherwise unknowable to us. Our desires for sugar and sweet smells, our eye for brightly coloured flowers are so similar to insects, that the story is present, but remains untold because we prefer a version where we cultivate aesthetic tastes, while plants and insects only have base desires. Here, the audience has an opportunity to be lead astray by plant desire and bee desire.

The diffractive behaviour of bees, plants and humans our attraction to bright colours and sweet tastes and smells, shows that we share similar appreciations because we depend upon each other, and we find similar conditions most conducive to life. These conditions can be basic things we need to survive such as carbohydrates, clean water and air, but also more complex and happenstance conditions, such as aromatic linden that incites a summer night feeling, or, yellow (red and white) petals on a dandelion. This installation, entitled *Sexual Selection* helps my audience see urban ecological complexity through sensory-territorial frame of bees. In that sense *Sexual Selection* responds to my initial research interests about shared desire and sensation by adopting backlights, fluorescent duct tape and candies and puts them in a scenario where they show a kinship with creatures easily overlooked by humans

These complex similarities imbue relationships between bees, humans and plants with poetic significance. In building the art project, *Sexual Selection*, I intended to illuminate sites of mutual attraction between humans, bees and plants. In my search for appropriate materials I employed colour, smell, music and lighting that emphasized the way in which shared desire between pollinating insects and humans has shaped consumer culture. Humans and pollinating insects are corporeally attracted to sweet food, smells and bright colours. Certain materials help simulate the bee experience for but my search for these materials required

that I attempt to become-bee. The air was infused with linden oil, the closest thing to the smell of linden blossom, which releases its fragrance at night during the spring to attract night pollinators. For the same reason it is a popular tree to plant in downtown areas of cities where we like to linger for night time revelry. We humans have made our own simulations of this early-spring atmosphere and these manufactured smells are the clearest manifestations of our desire, another relationship we share with insects.

By illuminating difference in modes of visual perception between humans and bees and emphasizing the similarities in our attraction to flowers, my work invites a re-evaluation of territories. Our urban spaces are literally molded to fit us, but in making them this way we have ignored biodiversity. Urban biodiversity needs to be reconsidered within urban territories, but simply stating why this needs to be done is insufficient, it is more powerful to show why it is interesting and important. This art project shows the poetic relationship between humans, bees and flowers as an attempt to change the conversation around insects and weeds in the city.

I am influenced by many artists working in this field who make art that explores a shared ecological experience. The obvious example is Olafur Eliasson's, installations that reflect local climate, like the

Weather Project, an installation echoing the effects of London's climate that showed at the Tate Modern in 2001. Eliasson's work engages with the idea of climate as a shared geographical experience that shapes the culture and habits of a place. Obliquely, his work raises questions about how this shared experience will change as our climate changes, but his installations mostly just bring the audience to realize how much climate has an influence on their lives and their behaviour. This open, discursive way of engaging with pressing ecological issues allows the audience to realize why this is important and generate their own discussion. Closer to home, Diane Borsato's installations and events also make a discursive space for ecological issues. Her event, entitled *My Temper, your Weather*, involves 100 apiarists meditating at the Art Gallery of Ontario. This silent but powerful moment of recognition brings the audience to consider the connections and rhythms between bees, humans, climate and agriculture, without telling the audience how they should behave.

Through building *Sexual Selection*, I discovered sites of becoming where insects, plants and I had similarities in taste and desire. Constructing the fake flowers for *Sexual Selection* required that I identify an array of materials that would respond to ultraviolet light. This necessitated a strange hunt for things made of plastic that reflected the neon colour spectrum. I had an odd sensation, buzzing around the dollar store looking for

brightly coloured objects, particularly shades of blue, white and yellow. These actions implicate the actions of a bee at a picnic, tricked into searching for nectar on the blue and white striped tablecloth, tasting the yellow plastic plates... The experiences of hunting for these objects threw me into a becoming-bee, where I forgot about the function of the object, or its initial purpose, or what it was made of and focused entirely on colour. I collected tennis balls, fake flowers, dog's chew toys, and several squishy rubber sea urchins. Completely engrossed in colour, my becoming-bee disregarded the intended use of the objects. This experiment in attraction outside of function shows that many products appropriate the colours, patterns or smells of flowers to allure browsing humans. As consumers, our attraction to sweetness and bright colours constantly pulls our attention around the store and shopping mall. In making our susceptibility to these colours, smells and tastes apparent, *Sexual Selection* links consumer culture with the older culture of attraction and desire we share with bees and flowers.

Scent Tunnels; Diffractive Investigations of Smell

This project materializes what it is like for humans to experience very limited sensory perception. When away from the nest, ants navigate and communicate the location of a food source with pheromone trails, which are scent trails communicating a very distinct olfactory coding. This project explores how we might manifest experiences in human-ant becoming through the building practices and navigational behaviour of ants collecting food. Worker ants have limited sensory perception, and navigate by following the pheromone trail laid by the ant in front of them. A trail can go 'cold' within a couple of minutes, without the trail, ants get lost in familiar territory; because trails last such a short time, their ability to navigate is temporally based.²⁵ This time-based ability to locate food something is akin to our sense of smell, which humans can only be aware of for short periods of time.^{26 27} Imagine if you were blind and deaf but could follow smells at two-minute intervals. Perhaps navigating like an ant is like smelling something delicious that immediately makes us crave a specific food. There are few smells we can recognize without actually seeing or tasting what

²⁵ Parikka 2010: 155-156.

²⁶ Malick 2014.

²⁷ But this communication is for sex rather than finding food. There are intriguing metaphors to draw out exploring the relationship between human sex pheromones (another expression of desire) and smells released by flowers to attract pollinators, but it is beyond the scope of the present investigation. Within this project, food smells are chosen over human sex hormones because they are readily available for purchase and my audience will be cognitively aware of their effects.

is before us. With its strong relationship to taste, food offers the strongest, and most desirable sensations. It is difficult to control scent because it slips so easily below the radar of conscious perception. We can recognize specific foods like bacon, coffee and cinnamon cookies by their scent, for this reason, strong synthetic varieties are manufactured for marketing purposes. Our sense of smell is intriguing because it tugs memories and desires to the forefront of the mind. But of course when we are ant our mind is always external to us, so we are unable to reflect. We have just enough awareness of our sense of smell to find the Cinnabon store in a shopping mall, but the smell was making us hungry long before we discovered our craving.

In the *Scent Tunnels* project, I further explored how consumer products manufactured for spaces of consumption (e.g. cafes, malls and supermarkets) are designed to incite hunger and craving in the patrons. I wandered through homeware stores, testing and collecting scents commonly used in marketing to create a synthetic sense of comfort. I selected recognizable scents of coffee, lemon sugar cookies, banana bread and bacon.

Building *Scent Tunnels* was an experiment for humans, offering opportunities to become-ant, it seeks to bring scent, which we are normally not aware of, to the forefront of our perception. In order to emphasize

scent, the installation had to suppress senses of sight and hearing because they are much sharper for humans. This was achieved by building a system of tunnels emulating an ant's living environment while befuddling our sight and hearing, to give participants a heightened awareness of smell. Like a colony of ants piling up an earth mound, these tunnels were built without a floor plan or a load-bearing frame. Building like this meant building from inside; collecting a heap of materials and then crawling around inside the heap until rooms, passageways and doors materialize. Ants build from small pieces of whatever they can scavenge, which they mix with their saliva to harden. I scavenged the soft leaves of cardboard from behind Tim Horton's, which bore the scent-traces of delicious cookies, doughnuts and bagels. It was impossible to produce saliva with the same abundant viscosity as an ant colony, so I had to find another material that would allow me to build from the inside-out; something both sticky and durable. Spray-on insulation foam was perfect substitute because it is liquid, but strong, and is meant to be hidden but expands extravagantly when not sprayed into a mold. Each scent within the tunnel had a different 'zone' that intended to stop the scents from mixing. As humans, we become indifferent to scent within a couple of minutes, but we remain in a state of scent awareness if there is a variety of contrasting scents. Crawling through the dark maze participants quickly became disoriented. After long moments in the dark we began to orientate ourselves towards various smells. The smell of bacon meant a fork in the tunnel, cinnamon doughnut demarcated a dead end, lemon sugar

cookies signaled the exit.

On Failure

The following section performs a critical analysis of *Sexual Selection* and *Scent Tunnels*, the ways in which they failed, and how they provides results that helped to determine the final exhibition.

For several reasons, *Sexual Selection* and *Scent Tunnels* do not clearly communicate the differences and similarities in desire between humans and insects. After testing immersive installation as a way to emphasize similarities in desire between humans, plants and animals, it became apparent to me that participation and immersion proved too distracting in contrast with the complexity of shared sensation between humans and ants or humans and bees, which was the initial goal of the project. It is easy to assume that participation richens the audience experience of the piece. However, the reverse often happens, because participatory art is judged as a success or a failure by the level of participation rather than the artistic merit of the piece. In *Sexual Selection* and *Scent Tunnels*, the installations created enthusiastic interactivity rather than an impression of bee vision or ant craving. The installations did not in fact throw the audience into a becoming, though it was evident from the number of willing and enthusiastic participants in both installations, that they were unique, joyful experiences. The conclusion of this analysis is that participatory, immersive installation is not necessary for the final show. This is because it is an unsuitable way to communicate nuanced differences in sensory perception between bees and humans because it communicates a sense of

participation, or involvement, rather than impressions of shared desire. Alongside these considerations, I also recognize the impossibility of answering my initial questions, which echo the consternation of Thomas Nagel's *What is it Like to be a Bat?*²⁸ It is laughably quixotic to attempt to know the mental state of another creature. Therefore, if it is impossible to 'know' another species, my artwork is an exploration of what cannot be known, sensed, or understood rather than a question of how best to do it. The research seeks impressions of desire from other species, but the artwork shows outcroppings of human desires and aesthetic preferences. This is a more realistic expectation for what an artwork can do. These experiments in installation and interactivity show that because of its complex ideas concerning biodiversity and shared desire, it is better for the work in the thesis exhibition to be viewed, rather than experienced. Echoing Deleuze, Grosz describes the importance of art having a "frame"²⁹; she argues that art frames "chaos"³⁰ and chaotic sensation so we can consciously enjoy its vibrancy. Although this project is rooted in a certain degree of chaos its goal lies not in discarding frames altogether, but finding one that fits.

This research has problematically assumed that the definition of sensation (e.g. having 'five senses') is

²⁸ Thomas Nagel 1974:144.

²⁹ Grosz, 10.

³⁰ Grosz, 13.

universally accepted by all humans. Thus, it is important to note that *Sexual Selection* and *Scent Tunnels* stand clearly in the realm of Western cosmology.³¹ In this context, cosmology delineates the world view of a particular culture, denoted by how this culture describes sensory experience. Constance Classen³² echoes Marshall McLuhan in stating that the semantic implications behind the concept of a world view speak volumes about the privileging of sight over other sensations in Western culture. I attempt, with mixed success, to place sight and visual imagery at a disadvantage, so my participants must use different (non-visual) senses such as smell. McLuhan proposes that non-literate societies privilege hearing, calling them 'oral/aural cultures.' Classen's research takes these conclusions to non-literate societies living in Mexico and the Andaman Islands to research how they conceive of sensual perception, and how this might reflect their cultural cosmology. She finds that not only do the communities privilege different senses in their cultural cosmology, they also demarcate difference between senses in a way that is incompatible with the Western metaphor of 'five senses.'

Instead of privileging sight in their cosmology, Tzotzil of the Chiapas highlands of Mexico use metaphors

³¹ Constance Classen 2005:147.

³² Classen argues that the term 'world view' to describe a 'system of belief' indicates how Western culture privileges vision over other senses. In using the term 'Cosmology' instead of 'worldview', Classen seeks metaphors for understanding the world that privilege different senses.

emphasizing heat to describe the passages of time, including daily time keeping and annual cycles of religious festivals. Heat also describes a person's social standing; people accumulate heat as they grow older. Certain foods such as corn and cane liquor are considered 'hot' while potatoes are described as 'cold',³³ indicating that intensity of heat is metaphorically ascribed to other people and things in order to frame the world. To the Tzotzil, the universe has a thermal order.³⁴ The Ongee of Little Andaman Island describe their experiences through odour; to the extent that the greeting 'how are you' translates literally into 'how is the nose?'³⁵ If, according to Classen, certain definitions of what it is to describe 'hot' and 'cold' are not even consistent amongst humans then it is clear that the metaphors used to describe my artwork closely attend to the Western world view. Conjecture on the difference in visual perception between bees and humans locates my work firmly within Western interpretation of sensory perception, which describes five senses and privileges sight as the truest and most reliable sensation. If there is such variation in cosmology amongst humans, how could I possibly imagine the different experiences among bees? Perhaps the strongest impression I can produce through my work is to expose the assumed universal metaphors of Western sensory cosmology. This conclusion leads me back to Gorsz's suggestion that art

³³ Classen, 149-151

³⁴ Classen, 152

³⁵ Classen, 153

extends our capacity for sensation.

Altogether, the issues at stake in participatory art were distracting my participants in the art projects discussed above, from engaging with key themes of shared sensation between plants, animals and humans. This problem, coupled with the irreconcilable notions of cosmology in different human cultures, as evident in Classen's work, provided me with crucial findings that helped me devise the approach for my final show. In order to get at a diffractive analysis of bee-human sensory perception, I want my audience to consider similarities between their own desires for beauty, sugar and pleasure and the same desires in other creatures. In this way, the study of difference avoids the bind of assuming all humans conceive of sensory perception in the same way.

Drawing Bee and Human Vision

As such, I decided to create work that could expose bee vision to humans, specifically illustrating the difference between pollinating insect colour perception and human colour perception, and the consequences for these differences in how humans experience flowers. By focusing on the difference in colour perception between bees and humans this project considers Western norms of visual perception and seeks a frame (in a

Groszian sense) that accounts for part of the visual spectrum that remains unseen by humans, but which is vital for bees. The project privileges vision because my audience is good at looking at images. Rather than getting my audience to experience desire as a bee experiences it, which was giving unpredictable results, I cease to pursue the 'embodied' becoming-animal. This a critically reflexive move; I embrace vision as the most favoured sense in Western culture so I can adopt, and then subvert, conventions of botanical illustration. Thus, after exploring possibilities for an immersive installation, my thesis became a critical investigation in botanical illustration.

The issue at stake here is still to expose difference between insect and human desire and sensory perception, but previous investigation has honed my resolve to present these ideas to my audience in a form that is more likely to reach them effectively. Thus I create art that is unmistakably about human and bee vision.

Understanding difference is important, participating in the art work is not. Becoming-animal is important, but more as a method for myself as artistic research rather than a method for presenting my ideas or asking participants to engage. Audience satisfaction (the work compels the audience to engage with it) is important, because an audience will think deeper about artwork that they find visually compelling. The intended experience for my audience is a playful aesthetic impression of the relationship between weeds, bees and

humans, because this is a positive way to generate dialogue about urban biodiversity.

Seeing like a Bee

For the final exhibition I settled on botanical illustrations to help my audience imagine the difference between bee vision and human vision. If you type ‘ultraviolet flower photography’ or ‘bee vision’ into a Google image search, your search results will be a collection of gaudy flower photographs coloured with weird shades of green, purple and blue. Most of this UV photography is misleading; it uses filters that show the intensity of UV reflection, but the camera can only make monochromatic images of UV. While bees can see the ultraviolet spectrum but not the red spectrum, humans can see shades of red, but not ultraviolet. Photographers add the unrealistic colours to these photographs in postproduction, attempting to give a sense of the colour contrasts that might exist, if we could see the same spectrum as bees.³⁶ As a skilled botanical illustrator, I focus on texture and tone as well as colour to make visual metaphors that give humans an idea of how flowers look to bees. That is to say, I can make images that help conceptualize unseen colours.

³⁶ We know this because we can measure and compare the wavelengths of different colours. Ultraviolet light contrasts with green the way blue contrasts with yellow.

Experiments conducted in *Scent Tunnels* and *Sexual Selection* made me realize that instead of seeking the embodied experience of another creature, which engages the difference between our species and another in the most obvious way, I have decided it is more effective to engage my audience conceptually. This requires a reassessment of the relationship of this research to reflexive and diffractive analysis. Like Haraway, I remain suspicious of the tautological aspects of reflexivity as a method of analysis that seeks conformity where there is multiplicity. However, it is also important to consider the results of my experiments in immersive installations. It appears impossible to communicate difference between human vision and bee vision. By describing this position as cognizant instead of embodied I make a distinction between immersive installation, such as *Scent Tunnels* and *Sexual Selection*, that attempt to place the audience in a diffractive position towards the work, and botanical illustration that encourages a critically reflexive position. Thus, initially, this project sought ways of getting the audience to feel what animals and plants feel. This is impossible. What is possible is to offer opportunities for my audience to imagine what they cannot know, but this requires the audience to become cognitively aware of their senses through a process of critical reflection as opposed to embodied diffraction. I cannot get my audience to see colours that are impossible to see, but maybe *Pollinate/Illuminate* can help a Western audience conceive of colours beyond our own sight, and consider the experience of another creature. Looking at an image of a recognizable flower, but drawn in a

scale of tone and texture that is otherwise unimaginable, grants the viewer a perspective into a multiplicity of possibilities that displace human experience and offer an opportunity to imagine it in a boarder context of bee experience.

Alongside these drawings I have made a garden of locally collected weeds in the window of the gallery. One side of this window will be lit with blue lights and the other with red. In the relative warmth of the exhibition space compared to the outdoor climate, these plants will experience accelerated growth over the ten-day period of the exhibition. Plants respond to different frequencies of light in different ways; red light makes plants bloom abundantly, while blue light makes plants grow a lot of green leaves. By using both lights on different sides of the window, there will be a marked difference between both gardens by the end of the exhibition, encouraging the audience to reflect on how light and colour is sensed by organisms in different ways. This sculptural component is connected to the drawings by differences in the lighting spectrum. In this respect, the exhibition contains diffractive and reflexive aspects. The drawings are illuminated with black lights that are connected to a motion-activated sensor that switches on when an audience member enters the gallery, radically changing the colour of the drawings. Once the viewer has been in the space for about 30 seconds the black lights switch off, revealing the original colours of the drawings. Because the

drawings are rendered in different mediums and different types of paper, each surface responds differently to the black light. By showing each of these drawings in two states, the audience is presented with a multitude of reflections, each offering a different possibility of how bee vision could be interpreted. The coloured lights in the exhibition draw together the static qualities of the drawings with the temporal qualities of the weeds, which morph in reaction to the light. These effects create a diffraction that shows the audience how plants, bees and humans respond to the colour spectrum differently.

Rather than participating in a garden party or getting lost in a maze, the audience will conceptualize the difference between human and bee vision through botanical illustration. To achieve this I have been critical of the chaotic impressions created earlier in the research process and in this respect I have used diffractive methods as a research process to make critical reflections. The diffractive chaos of my earlier projects aided the development of a critical frame that crystalizes around the difference between human and bee vision.

Classification

By attending to the multiple possibilities for sensing and perceiving colour, drawing and specifically botanical illustration, this research queries our relations to the linear logic inherent in the botanical tradition.

Botanical illustration is coloured by colonial exploitation and, arguably, unethical science. The Linnaean style of drawing, a classically linear method of taxonomy from the 18th century, supports epistemological systems that have literally uprooted plants from their cultural and ecological contexts, for reasons including the pursuit of agricultural profits on an industrial scale. Linnean botanical illustration was a system of institutionalized conformity supporting scientific reflections criticized earlier in this paper. This art practice and thesis both inquire into categories and taxonomic logics of botanical illustration to highlight tensions explored earlier between reflection and diffraction, permaculture and agriculture. The drawings in this show differ intentionally from traditional botanical illustration in that they do not claim exhaustive knowledge, and they embrace the practice-based knowledge created by permaculture.

As such, by paying attention to details happening in one's own garden, the exhibition is critical of "reflection." In this respect, monocultures can be seen as reflexive practices, because they use an external framework of pesticides and herbicides to reproduce the conditions required to make plants successful. One of the most contentious aspects of botanical illustration as a method of taxonomy is that it relies upon an image of a single specimen as archetypal evidence of the properties of the species. In making drawings that show a proliferation of possible ways for seeing the same flower, this exhibition undermines this tradition of

singularity while adopting its authoritative vernacular of representation.

Practically, the work engages the conventions of standard botanical illustration delineated by the Linnaean taxonomic method. Linnaean illustration relies on the assumption that any plant in the world can be classified into one of 24 groups of plants based upon the number and size of stamens in its flower. The 24th group, cryptogamia, is anomalous, referring to plants that have no flower, like mosses and ferns, whose means of reproduction was ambiguous. Botanists have long rejected the Linnaean system of classification for reasons that echo Haraway's criticism of reflection: it cannot account for differences, such as plants that do not have a stamen or a stigma. In doing so, the Linnaean method negates ecological complexity. If Linnaean taxonomy attended to these anomalies such as those categorized as cryptogamia, they would find information that undermined the value of the stamen and the stigma as a useful way to categorize plants. Instead, these irregularities are seen as a threat to the system. The Linnaean method fails to question the relevance of the criteria of categorization: it concludes; 'all plants reproduce with stamen and stigma.' This epistemological system condenses the proliferation of differences into one ill-defined category. In doing so, it misses opportunities for inquiry.

In this respect, Linnaean traditions of botanical illustration are a clear example of the shortcomings of reflexivity as an epistemological method. The Linnaean method was successful because it was the most elegant and fast way to classify plants. It was also a remarkable servant of commerce, as can be seen in the role played by the Linnaean method in the development of international trade of valuable monocultures, such as cotton. In 1768,³⁷ Joseph Banks, a gentleman³⁸ and amateur botanist, sailed with Captain Cook on a three year voyage around the world. A voracious collector, Banks sought plants that would profit the British Empire by providing raw materials to fuel the emerging industrial revolution in England. In this role, and with the disregard for local culture and ecology typical of the age, Banks transported cotton seeds out of India for experimental production in the Caribbean, planted the seeds of Brazilian fruits in Tahiti, and attempted to import breadfruit plants from Tahiti to Jamaica as a source of cheap food for slaves on sugar plantations.³⁹ ⁴⁰ With new images and names to support his ideas, these acts show Banks' confidence in an overarching system of agricultural knowledge that allowed him to transfer breadfruit, indigo, and cotton, enriching the British Empire through the cultivation of profitable monocultures.

³⁷ Tobin1999: 175

³⁸ Haraway, 95

³⁹ Haraway,177

⁴⁰ During the 18th century unemployed members of the upper class, because of their legal standing and education, were considered the trustworthiest members of society to carry out scientific observation.

In accordance with this reductive method, the Linnaean style of drawing disregards local culture and ecology. A botanical illustration of this era is a flower and a few leaves on a clean white background, accompanied by the newly assigned Latin name of the plant. The staggering ecological impact of this type of botanical illustration and the system of thought it supported is evident today in the rural landscape of former British territories like North America and New Zealand. Agricultural methods in these places use practices of monocultures, guided by assumptions that homogeneity, control, and holding-back-the-wilderness are ideal methods for practicing agriculture. In doing so, these practices create metaphors of agriculture that describe plant cultivars as rootless/rhizomeless entities that sit outside of 'nature.'

By appropriating the conventions of botanical illustration and using them to show a proliferation of possibility, this exhibition uses variation to challenge the assumptions of control considered imperative in industrial agriculture.

The Trap of Reflection

By creating botanical illustrations that show a proliferation of possibilities I wish to avoid making art from a position of authority. Like botanical illustration, scientific photographs can also be reflection-making machines; they uphold the tradition of botanical ‘types’⁴¹, marginalizing variety and difference, duplicating the authority of the photographer. Susan Sontag characterizes the relationship between photography and power:

photographs really are experience captured, and the camera is the ideal arm of consciousness in its acquisitive mood. To photograph is to appropriate the thing photographed. It means putting oneself into a certain relation to the world that feels like knowledge — and, therefore, like power. ⁴²

Sontag describes the authority that comes with holding a piece of the world still and cropping the rest of the world out of the frame. This approach is similar to growing a monoculture where weeds and ‘rogue’ varieties are poisoned and choked out. My investigation initially shied away from images because of my discomfort with a misappointed authority that could be perceived with making images of plants. When considering images it is difficult to avoid thinking in terms of a ‘type’ that is meant to represent an entire species, and

⁴¹ Tobin, 191.

⁴² Sontag 1990: 4

therefore any variation from this norm is considered a deviation. Informed by diffraction, I seek many deviant reflections. In order to avoid uncritical reflections, the final thesis work produces drawings instead of photographs because drawing can offer different approaches to expressing ultraviolet light through texture and tone. I also make drawings because I wish for a certain physical proximity to my subjects that cannot be achieved through a photographer's lens. Drawing denotes better possibilities for becoming, while photography makes accurate representations.⁴³

Through diffractive analysis I seek to collapse my authority over images and create critical reflections for the audience. By making a series of the same image, drawn in multiple ways, I make it impossible for my audience to refer back to a 'type', and therefore break with the authority of the single specimen that is necessary to taxonomy. The black light in the exhibition aids this critical reflection by extending the possibilities for the ways in which these drawings can be viewed. By creating a speculative impression of bee vision, this exhibition displaces human authority over the colours and patterns of flowers. This displacement renders the authority of Linnaean taxonomy and monocultures voiceless by showing that it can only account

⁴³ Of course, photography does more than make representations, it is also possible to make critical and creative images with a camera. For this project, it is important that the impressions of the world are mediated through the body of the artist rather than through a camera.

for the experience of humans living in Western cultures, which is no longer a suitable or sustainable goal for studying broader ecological interactions.

Making images comes out of a desire for proximity, a physical and intellectual craving to hold the world still and assess our relationship to it. This desire is echoed in Grosz's characterization of art as an assertion of territory, which holds the chaotic sensory impressions of the world still and confirms our experiences. The botanical illustrations in this exhibition assert a reflexive stance that criticizes traditional botanical illustrations which compare human experience to an imagined external world. If there is no 'external' world to reflect upon, then what would botanical illustration look like? ⁴⁴

By growing weeds under grow lights in the gallery window and presenting botanical illustrations that challenge linear traditions, this exhibition invites the audience to reconsider methods of knowledge creation and classification. Overall, viewers will reconsider the aesthetics of wilderness and biodiversity simultaneously from the position of control and wild proliferation. This reconsideration displaces human experience, placing it alongside the experience and desires of bees.

⁴⁴ Here, 'images' refer to drawing as well as photography.

Becoming Botanical

Another concern for the final work is how the durational qualities of drawing implicate the body of the artist. There are theoretical concerns because this paper initially argues for art that enmeshes the audience in an immersive experience. It is important to readdress what aspects of the immersive embodied insect/plant experience I carry over into the botanical illustrations. In pursuit of this proximity to bee experience, this section outlines my studio investigation into closeness; physical proximity to the other, to the artist's hands and to the creatures I am investigating. Prior to photography, botanical illustration was used as a method of scientific inquiry, an inventory of conquest and a documentation of colonization. Humans have made pictures of nature as a way of imposing our own order onto this chaotic mass of variation⁴⁵.

Drawing, while it can fall into a reflective trap, can be used to undermine the structures of colonial representation described above. It is easy to dismiss this drawing project as a contradiction, because it imitates botanical illustration to criticize it. To create critical reflections the thesis seeks to render embodied experiences, influenced equally from practices of observation, becoming-animal and finding the right

⁴⁵ Deleuze and Guattari, 314

frame.⁴⁶

As I draw, I search for singularity in the vibrant stream of sensation. Making clear detailed images is a way to slow down the mass of sensory chaos that arises when tuning into fine detail. Here, I can show the world as a multitude of possibility – as Bergson describes, a stream of vitality.⁴⁷ The invention and development of photographic traditions have changed our use and appreciation for hand-made images of nature. Machine-made images record all detail and texture in an image at one time, compared to the artist's hand, which edits the scene *as she draws* in order to understand it. In this respect, drawing can be viewed as a process akin to Bergson's becoming, that immerses the artist in a milieu of shape, tone and texture.⁴⁸

This understanding is different from reflexive understandings created by traditional botanical illustration because it opens up representation to different variations, instead of closing them off. Here, however, I wish to pursue specifically hand-made images of nature because, through the vital/durational qualities of drawing, which co-ordinate the artist's eye and hand, the images have a different relationship to time than

⁴⁶ Once again in with reference to Grosz's characterization of the 'artistic frame' as a mechanism for filtering and selecting sensations in the chaos of the world.

⁴⁷ Bergson 1998: 340-341

⁴⁸ Bergson, 301

photography, and to the artist's body, because the images begin as an experience of the world and are mediated through the eyes and hands of the artist.

Botanists also recognize the problematic authority granted to botanical illustrations that claim exhaustive knowledge of a plant's properties. To avoid this authority, traditional scientific illustration has given way to new, more reliable methods of recording plant data (a combination of photography and measurements proving colour, size etc.) However, the reliance on the botanical 'type' - a single specimen representing all the qualities of its species - continues as standard practice in contemporary botany.⁴⁹ Despite a great deal of criticism regarding the violence of representational art and photography that creates singular 'types', this discourse has not affected the dominant culture of botanical taxonomy. That said, botanical scientists contributing to the Floral Reflectance (or FReD) database publish data on the rates of UV reflectance in flowers. In doing so, they criticize modes of representation and classification that only account for human colour vision and negate how pollinators experience flowers.

For example, a paper published by a group of scientists on the FReD state: "...some studies investigating

⁴⁹ Daston and Gallison 2007: 110

flower colours in plant communities have only considered these colours as humans perceive them.” Such neglect of insect vision is clearly inadequate, as two colours that look distinct to a human can look similar to a pollinator, and vice versa.⁵⁰ Clearly at least some in the scientific community are aware that methods of botanical taxonomy are inadequate for researching the experience of pollinators. In reaction to the mysterious dwindling of global bee populations, some botanists and entomologists are searching for alternative methods of studying the relationship between plants and bees. Just as these botanists search for methods of representing flower coloration as data that accounts for bee experience, this project searches for images that show the public different possibilities of how flowers could look.

⁵⁰ Arnold, Faruq, Savolainen, McOwan and Chittka 2010

Pollinate/Illuminate: Diffractive Reflection

Like the researchers compiling the FReD, my artwork undermines anthropocentric depictions of nature by creating botanical illustrations and artificially lit gardens that draw attention to the differences of bee and plant sensation. In doing so, this exhibition reveals how our methods of ordering nature show how we aim to, and succeed in, influencing it. This artistic investigation explores these ideas first as participatory installations and then manifests them as a drawing exhibition. Throughout this process, the work remains critical of epistemological systems that enforce homogeneity over difference and, in doing so, it echoes Haraway's and Barad's comparison of diffraction and reflection as a epistemological methods.

By performing a critical analysis of practices of homogeneity found within the Linnaean taxonomic method, I find connections between this inward-looking method of categorizing plants and Western industrial agricultural practices that favour monocultures. In their negation of difference through the liberal use of pesticides, modern agricultural practices are also a major threat to bee populations worldwide. Ultimately, in undertaking these practices, farmers, pesticide and herbicide manufacturers ignore the differences between human need and insect need, and the complex system that binds in productive ways. As such, in accepting these reductive methods and norms we are risking our own food security. In response to this, my

research/exhibition seeks to address the material results bred by these accepted ideologies. This exhibition pairs human need and desire with bee need and desire, to show how our existence is enmeshed.

The work repositions sensation and desire of bees to the problematic values of control inherent in agriculture and traditional botany. In so doing, I make botanical illustrations that consider bee experience to expose how humans can imagine different sensory impressions, and I show how difference can be explored from within a system designed to negate it, which in this case is the Linnaean method of botanical illustration. By adopting Grosz's suggestion that art extends our sensory perception, the work suggests that art can help us establish stronger connections to other species in our ecosystem.

My research began with a series of immersive installations which helped develop the critical framework necessary for this exhibition. These initial questions about human relationships with aesthetics and biodiversity were pursued first through immersive/interactive installations about insect experience. I created a light installation in the Grange Park that used near UV lights and fluorescent tennis balls and duct tape to give my audience an idea of what it could be like to navigate and see flowers like a bee, or other night pollinating insect. This project aimed to help audience members realize similarities in desire, for example,

sugar cravings between pollinators and humans.

With further consideration to the idea of cravings similar to the unconscious desires held by an ant or a bee, in a subsequent project I used synthetic food smells in a maze of tunnels in the hope that participants would be able to navigate by following certain smells. Because the projects were unable to give participants an embodied sense of what it was like to be an insect, I used what I had learned from diffractive experimentation to find critical reflections that focused with greater specificity on one human-animal-plant connection, namely the relationship between bees, humans, and dandelions. The final exhibition *Pollinate/Illuminate* is a series of botanical illustrations, lit with black lights on sensors that show multiple possibilities of how bees and humans can experience flowers differently. Alongside these drawings are a variety of weeds growing under coloured lights, which aim to bring the audience's attention to how the light spectrum influences different species in different ways. Colour and light show bees where to land, make plants burst into bloom, and make humans cultivate certain flower species. As a whole, this exhibition encourages the audience to consider how the experience of bees – and other animals - are excluded from our epistemological taxonomic, homogenous, monoculture worldview, and how these methods cause us to perpetuate traditional botanical illustrations and the reflexive stances it supports, limiting our ability to

understand ecological complexity. Because I developed the drawing project during the winter many possibilities remain unexplored. Another possible project in this series will test the drawings on bees to determine which images they are most attracted to. Opportunities for future research also lie in the open-source data on the Floral Reflectance Database, where I could reconfigure the colour reflectance data back into images that were attractive to bees but did not resemble flowers to humans.

This exhibition/argument *Pollinate/Illuminate* is an exploration in how humans can feel beyond our own sensory perception. It explores this first through diffractive analysis of immersive/embodied sensation and then through drawing that creates critical reflections. The work problematizes that we take for granted that weeds and pollinating insects will always be present, and the conflict that exists as we drive them to extinction and threaten our own food security. This exhibition shows the visual spectrum we have in common with plants and bees and invites us to imagine beyond the limits of our own visual spectrum. We need to reconsider our mental and physical proximity to bees, weeds and messy gardens. Humming with a multitude of possibilities, this exhibition takes a step toward the beehive.

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