

What Does a Garden Know?

Permaculture explorations in the field and studio

by bekkly O'Neil

A thesis presented to OCAD University in partial fulfillment of the requirements for the degree of Master of Fine Arts in Interdisciplinary Master's in Art, Media & Design

Toronto, Ontario, Canada, 2020

Abstract

What Does a Garden Know? examines the process of creating a sustainable permaculture farm through the lens and medium of animated documentary.

Looking from the very big - our human impact on the environment, all the way down to the very small microbes living in the soil, this film and paper are specifically interested in consciousness and the barriers we see between different types of life (plants, animals, microorganisms) and whether the complexity of their relationships can be replicated in an artificial setting.

Drawing inspiration from Ursula K. Le Guin's *Carrier Bag Theory of Fiction*, I am creating a frame by frame animated film in a mixed media style. The film makes use of different animation methods to tell a story through a collection of moments: spanning from the stop motion, under camera manipulation of objects and puppets, to hand drawn traditional 2D animation, rotoscoping video onto paper making use of inks from materials that have been cultivated from the landscape, and finally documentary video of the farm in development.

In choosing to use animation instead of more traditional documentary filmmaking techniques I am able to take advantage of the abstraction of images to translate an environmental political message into the poetic realm, making a message more universally accessible. The works are contextualized through the lenses of permaculture and sustainable agriculture, ecofeminism and post humanism, and animated documentary film criticism. The resulting work is a personal film about my own relationship to nature, and feeding a community.

Key Words

Permaculture, Animated Documentary, Sustainable Agriculture, Art Farm, Traditional Animation, Under Camera Animation, Rotoscoping, Plant-Based Inks, No-Till Farming, Carrier Bag Theory of Fiction, Eco Feminism, Post Humanism

Acknowledgements

This work would not have been possible without the support, help, and sweat of friends, mentors and loved ones. A farm is not built by two people, a farm is built by a community.

To my advisors at OCAD: My Principal Advisor Philippe Blanchard who has been along for the academic ride since 2017 and has watched numerous indiscernible animatics, read drafts of many overwritten monologues, and made sense of more typos than I care to admit, thank you for your continued patience, guidance, and encouragement to play while creating work. To my Secondary Advisor, b.h. Yael, thank you for your editorial eye, for many fantastic suggestions of further research and direction. Without my advisors my film would be little more than a pile of paper, and this essay a very confusing rant. Thank you both for seeing the large vision even in the mess.

To Dr. Barbara Rauch, former Graduate Program Director and Dr. Martha Ladly, current Graduate Program Director, thank you both for believing in my project, and for understanding that commuting to OCAD from a farm sometimes meant doing things in unconventional ways. To Julian Higuerey Nunez our Graduate Program Coordinator, thank you for your kindness, for always responding to my panicked e-mails and for your help navigating so many academic questions and deadlines. It has been an honour to work with artists whose practices I admire so greatly.

To my external examiners, Dr. Selmin Kara and Wrik Mead, and my thesis defence chair Dr. Jessica Wyman, thank you for your insight and feedback. Although because of Covid-19 we were unable to share the physical space of a conventional thesis defence, I will forever remember the moment of opening your e-mail, and the generosity of your comments.

To my mother, Jeanne, for your unwavering support, thank you. It has been a surreal experience to take a childhood dream, and attempt to build it into a reality. Thank you for letting us be and grow on the farm. To my dad, Denny, thank you for always listening in stressful moments, for your love and support. To my sister Joey, whose poetry and creativity inspires me, and whose music served as the soundtrack for many afternoons writing in the studio, thank you for checking in despite the distance between our homes. Moments of our childhood lived in nature inspired this project.

To my aunt, Marilyn Beker, who taught me about the world of film, especially socially engaged film, and encouraged me to explore it, thank you. To the Del Principes, thank you for being my other family, for believing in what we were doing on the farm, and for always helping when possible. To Iain, for being the kindest and fanciest farm supply delivery service in all of Northumberland when things got too hectic to pick up goods at the co-op, thank you.

To Bruce Bailey, thank you for supporting my studies, for seeing something in my work.

To all the friends who helped us build this immense thing, from stacking bricks in the bread oven to soaking ducks in epsom salt baths, or transplanting tomatoes: we could not have done it without you. To our intern, Serena Fisher, we *really* could not have done it without you.

To our friends from the Cobourg and Warkworth Farmer's Market, thank you for sharing knowledge, bartering with and supporting us. To our clients and collaborators at Cardboard Reality Farm & Studio and community members in Cobourg, to our 2019 C.S.A.A. members, thank you for letting us be a part of your story, and for being a part of ours.

To the ladies of the Pussy Posse, thank you for being inspiring powerhouses in each of your fields. You are the most amazing friends a girl could ask for. Thank you for sending me messages of love even when I was too busy to respond.

To the many cohorts which as a part time student I have had the honour of being a part, thank you for inspiring me, for helping me navigate grad school, and for staying in touch even years later.

To my professors over the past four years: you challenged me and made me a better artist. Thank you for your passion, and for exposing me to new worlds each semester.

To the beautiful animals on our farm, past and present. Thank you for enriching my life, my respect for life, and for teaching me about kindness. To our Alaskan Malamutes, Kodak and Maple, thank you for not eating my thesis, for keeping me active when I would rather have been animating. To all four cats: Dylan, Coraline, Buddy & Wikipedia, thank you for keeping my feet warm, for helping me decompress. To Tybalt the one-eyed rabbit, you are an excellent studio mate. Making salads for us was my favourite snacking ritual throughout this process.

To our lovely ducks, the ones with names and the ones without: Totoro, Kiki, Calcifer, Crookneck, Kamaji's Brother, Ponyo, Ashitaka, Gandalf the Grey, Mononoke, Nausicaa, Kamikaze Girl, Reinhardt, Tracer, Mercy, Richie Rich, Calcifer's Son, The Sophies, Petunia, & the little white ones, I can't always tell you apart, but watching you grow and find happiness in the garden (and the pond) has been one of the great joys of my life. Thank you for your beauty, and your eggs.

To the plants that fed us, and the land that fed them, and all the tiny creatures in the soil that makes growing anything at all a possibility, thank you. We operate at different time scales, but our collaborations are more important than I knew.

And finally, to my partner, Keith Del Principe, who was not only along for the adventure, but designed it. Thank you for growing with me, and allowing me to grow with you.

Dedication

*For all the small farmers with big dreams,
For our ancestors, for whom working the land was not a choice,
& For all the seeds that will one day be trees.*

Table of Contents

Abstract2
Acknowledgements3
Dedication5
Table of Contents6
List of Figures & Illustrations.....8

Prologue

Introduction9
Territorial Acknowledgement & Indigenous Ways of Knowing17

Part I. On the farm

Chapter I. How we got here20
Chapter II. How we grew24
Chapter III. Mistakes and Triumphs (Lessons)37
Chapter IV. Symphony of the Harvest / What does a garden know?43

Part II. On the film

Chapter V. Documentary as lived experience (Methodology)52
Chapter VI. The Carrier Bag Theory of (Non)Fiction56
Chapter VII. Animation. Abstraction.59
Chapter VIII. Interdisciplinary: Animated Documentary / Agricultural Documentary65
Chapter IX. Technical Execution74

Epilogue

Chapter X. Reflections & Future Growth83

Addendum: Current State of the Film *What Does a Garden Know?*.....86

Works Cited88

Appendices

Appendix A. The Script94

Appendix B. The Film - Accompanying Digital Material.....98

List of Figures & Illustrations

Figure 1. Illustration of 2015 Garden Plan.....	32
Figure 2. 2015 Garden Plot.....	32
Figure 3. View of the Garden in 2017.....	33
Figure 4. View of the Garden in 2019.....	34
Figure 5. Detail view of the Garden in 2019.....	34
Figure 6. View of the Farmhouse and Garden 2018.....	35
Figure 7. bekkky at Lisgar Park Market 2017.....	36
Figure 8. Stall at Cobourg Farmer’s Market.....	37
Figure 9. Heirloom Squash.....	37
Figure 10. Cardboard Reality Shop in Cobourg.....	38
Figure 11. C.S.A.A. Artwork.....	38
Figure 12. Heirloom Tomatoes.....	39
Figure 13. The Garden in Full Bloom.....	41
Figure 14. Harvesting Veggies.....	41
Figure 15. Lamp Black & Duck Egg Ink Illustration.....	52
Figure 16. Sketchbook Page.....	52
Figure 17. Paper Props to be Cut Out.....	74
Figure 18. Paper Puppets to be Cut Out.....	74
Figure 19. 2D Animation Frames.....	75
Figure 20. Rough 2D Layout in Field Guide.....	75
Figure 21. Rotoscoped Frame in Black Walnut Ink.....	76
Figure 22. Digitally drawn animated dissolve transition.....	77
Figure 23. Natural Ink Experiments.....	78
Figure 24. Still from Live Action Video Sequence.....	79

Prologue

“Still there are seeds to be gathered, and room in the bag of stars.”

Ursula K. Le Guin

Introduction

I was a city girl that yearned for a pastoral past I'd never experienced. Growing up in downtown Toronto where gardening consisted of taking a plant from one plastic container and replacing it in a larger one, the farm was a wild and wonderful place of space, but one that was only inhabited on alternate weekends, and sometimes over the holidays. My understanding of my place in nature was limited to glimpses, momentary experiences disconnected from one another in the larger span of time. I didn't know when certain things bloomed, or even the difference between plants. I was fortunate to experience many things in my youth, but organic home-grown produce was not one of them.

My family's farm was a cottage, a vacation home an hour and a half from the city that just happened to be sitting on acreage. It was a retreat from the bustle of city life and a place where we could reconnect in the ever more hectic world of new digital technologies.

As the years progressed and I became interested in environmentalism and the ethics and politics of our food system, I continued to visit the farm on weekends home from University. Time and time again I found myself face to face with elements of mechanized agriculture that

upset me. I felt, without the vocabulary to describe it, that the neighbouring farmers who were “maintaining” our fields were essentially mining them of their nutrients. Each year the soil on the 80 acres they cultivated seemed to be of worse quality. Their crops were hardly robust looking, and the neon pelletized chemical inputs they threw across the fields didn’t look like they belonged in the meadows we hoped to visit. But when I expressed a distaste for their land stewardship the usual response was that I, who at the time lived very far away in Montreal, was spending a lot of time talking about something I knew nothing about in a place where I spent very little time.

I could see so much potential in this space. We both could. My partner and I had met years before in Vermont while working as summer interns for the legendary American political theatre troupe Bread and Puppet Theater and I think a part of both of us was still chasing that dream of moving to the country, starting an art farm and making anew a space where we could live in greater harmony with each other and the environment. And so in 2015 we moved out to the farm for our first summer, and to start the journey that would eventually become the content of this thesis.

The problem with the modern mechanized agricultural industry is that it is based on storage, bulk and quantity. It is the brilliantly effective but ultimately doomed prioritization of what can be sown and grown, harvested and packaged today over the long term health of our planet, and our selves. By some accounts we only have 60 growing seasons (Arsenault) left before soil degradation reaches beyond the point of no return and turns our blue planet into a wasteland. Our vegetables are bred for shelf life, rather than flavour, and most of what we eat

is so dosed in pesticides that we're compromised our gut health. (Barber) A shift towards a more sustainable and regenerative form of agriculture is necessary, but how? To me one thing seemed abundantly clear: if I wanted to get closer to the solution I was going to have to get out of the city and back to the garden.

The purpose of this thesis research was to investigate the process, nature and viability of moving out to a piece of land and starting an organic farm. The secondary purpose was for me to record the journey, and to use my media skills as an animator to create a documentary short that would share the story, whatever the outcome, of our farm.

I was interested in how, as first generation farmers, we could learn skills traditionally passed down through family or apprenticeship. The goal was to look to and attempt to implement traditional knowledge about how to grow food in greater balance with an ecosystem.

As soon as I started to grow things I felt like I was part of something greater, an ancient system, tasks performed by my ancestors hundreds of thousands of times for hundreds or thousands of years. But it didn't feel like creating in the way making art was creating. The creation continued after I went to bed, and in the morning there were surprises. The project was a collaboration with nature, and I wanted to know what my garden knew. What did the trees feel? Or how did the sunflower know which way to turn its face? And how did my ducks know exactly where I had planted seeds the week before?

I titled my thesis *What Does a Garden Know?* in reference to the nursery rhyme:

Mary, Mary Quite Contrary,

How does your garden grow?

With silver bells and cockle shells and pretty maids all in a row.

(Elliot, 1)

Because to me this work is the meeting of old knowledge and poetry. “How does your garden grow?” puts all the power in the green thumb of the gardener. But I believe the garden itself has agency, that the plants and insects and microorganisms in the soil are part of a great web of consciousness that works together.

And so in addition to my first thought, through this thesis work I wanted to ask:

In what ways are individual elements of (or participants in) an ecosystem conscious or sentient of the world around them and the complexity of their relationships, and how has our human-centred understanding of knowledge limited our understanding of the importance of these interconnections?

I set out to investigate the nature of the divisions we have imposed between humans and animals, and between animals and plants. To explore and analyze the character of ecosystems with regards to any interconnections or consciousness between the soil, plants, animals, humans. And finally, to determine to what extent we can replicate these

interconnections in an artificial or controlled network (i.e. a farm) as opposed to in nature (i.e. an old growth forest).

I also set out to cultivate materials in the garden for the creation of my animated work, asking how hand made supplies from home grown and foraged materials can tell stories that reflect the landscape or people's understanding of the environment in which they were cultivated. I wanted to reflect upon whether the use of mixed materials that reflect the subject matter (i.e. a film about a garden painted from inks harvested from its plants, or animations of the packets of seeds used to grow said plants) enhance the overall message of the work.

With regards to the final piece of created work, my thesis film, I set out to investigate the nature of animation as a poetic documentary medium in which the hand of the artist is inevitably visible. Is it possible, I wanted to know, to use animation to create documentary content to tell personal stories in universal ways?

Both my filmmaking and writing approach for this project was greatly inspired by Ursula K. Le Guin's 1989 essay *The Carrier Bag Theory of Fiction* in which she argues for a more feminist approach to storytelling in fiction, transforming narrative from the hero's journey into a collage process of gathering and carrying. I wanted to examine how a collage methodology could be used to represent collecting or gathering in a documentary practice and thesis, transforming storytelling into a process of foraging and editing.

My creative work is inspired by a range of auteur style filmmakers, some working independently outside of Canada, many working within Canada for the National Film Board. My methodology employed both practice-based research and Autoethnography, in addition to a collage methodology inspired by the work of comic artist Lynda Barry.

I have chosen to work within a mixed media style to further emphasize the multifaceted nature of this endeavour and the passage of time since the outset of the project. I want the final work to aesthetically reflect the complexity, years in the making, inspired by many separate moments of creation and discovery.

It is my hope that by transforming my experiences on the farm, including both lessons and triumphs, into accessible content that I will be able to share an honest account of four years in regenerative agriculture that can serve to both inform and inspire others to pursue their passions in the earth. The truth is, we don't need one small farm, we need thousands.

With regards to theoretical framework, I will be examining our agricultural practices through the lenses of permaculture design and sustainable agriculture. I will look to the the writing of American Author Wendell Berry and his 1977 revue of the state of industrial agriculture *The Unsettling of America*, in addition to writer and chef Dan Barber's *The Third Plate*, and American conservationist Aldo Leopold's 1949 essay *The Land Ethic*.

I will examine the interrelationships of the organisms within the garden through Peter Wohlleben's writings on trees and animal intelligence, and Daniel Chamovitz's work on plant

perception, informed by eco feminism and post humanism; specifically the writing of Donna Haraway and Cary Wolfe. Finally my animated documentary approach is structured through documentary film criticism, the work of Bill Nichols and theorists on the development of animated documentary, and comic theory, specifically the work of Scott MacLeod.

While it would be wonderful if such a project had no time limits, the reality of the scope of this study is limited to a short film by one artist animated in a year and recorded over the span of just five growing seasons. The project is limited in being a study on regenerative agriculture by not yet being able to provide a long term view of the impact of our actions on the ecology of the environment. As farmers often say, the best time to plant a tree is twenty years ago.

I will begin my research in the following pages with a territorial acknowledgement for the farm, which is located in Northumberland County, Ontario on unceded land. I will also briefly examine sources on Indigenous Ways of Knowing and Indigenous Ways of Living in Nature (Aikenhead and Michell), with regard to our relationship with the land, and how they compare to Eurocentric Scientific perspectives.

The first section of my written thesis: *Part I. On the Farm* is a written account of my research and experience with starting and working on a pesticide free permaculture farm - and follows the form and chapter titles of my thesis film *What Does a Garden Know?*.

In *Chapter I: How We got Here* I examine the family history of and my relationship to the farm and also the work that inspired my move to the country. In *Chapter II. How we grew* I take a

closer look at the thinkers and growers that inspired us, and dive into our growing style in the market garden. In *Chapter III. Mistakes and Triumphs (Lessons)* I look at what we learned and the realities of running a farm business, as well as my personal methodologies for journaling and cataloguing this experience throughout. Then, in *Chapter IV. Symphony of the Harvest / What does a garden know?* I examine contemporary research on animal and plant consciousness to attempt to answer my primary research question.

The second section of my thesis *Part II. On the Film* is a written account of the thinking, process and reflection of writing, directing and animating the above experiences into an animated documentary short. *Chapter V. Documentary as lived experience (methodology)* will reflect on my own experience of making a film about an adventure while simultaneously being on the adventure. In *Chapter VI. The carrier bag theory of (non)fiction* I expand on my filmmaking approach, and its intended effect, followed by *Chapter VII. Animation. Abstraction.* my meditation on the benefits, pitfalls, and nature of animation as a documentary medium.

Chapter VIII. Interdisciplinary: Animated Documentary / Agricultural Documentary is a literature review of current work in the field. Finally, *Chapter IX. Technical execution* outlines the approach for each of the four chapters of the film, rendered in a different style.

The final portion of my thesis consists of *Chapter X. Reflections & Future Growth* in which I ponder next steps, both in the garden and studio, for the development of this and future projects.

Territorial Acknowledgement & Indigenous Ways of Knowing

Our farm is located in Roseneath, Ontario and sits adjacent to Alderville First Nation, an Anishinaabe Community on Rice Lake. I acknowledge that the work I am doing sits on, and within, the traditional unceded land of the Anishinaabeg and Huron-Wendat peoples. It was given by the Government of Canada to Irish settlers in the 1830s, and has been continuously cultivated by a series of farm land owners and tenant farmers since that time.

The land was settled under what Karen Martin and Booran Mirraboopa refer to as *terra nullis* policy in *Ways of knowing, being and doing: A theoretical framework and methods for indigenous and indigenist re-search* (Martin and Marriboopa, 203), that is to say that the land was considered “uninhabited” by the colonizers and therefore ripe for the taking.

In regarding my own desire to return to a more natural state of ecological balance, and to return this land to a more productive ecosystem, I am interested in the ways in which I can look to Indigenous Ways of Knowing as a frame of reference for the creation of natural food systems that are more holistic or spiritual rather than commodity based. I am interested in exploring the ways in which Native American Epistemologies explore the notion of consciousness of the land, and the interconnectedness that surrounds us. In her essay, *Being Nature's Mind*, Mary Jane Zimmerman writes about the Dine perspective on the matter:

The human is closely related to the mountain because both exist at the center between Mother Earth and Father Sky. Thus, the mountain has the power to teach and to heal: “[I]ts very essence is the healing process.... The mountain itself is medicine” (296). The connection between the mountain and the human is expressed

as dzil bii" iistiin, usually translated as "the inner form of the mountain" Begay and Maryboy conclude: "Thus the mountain is consciousness and consciousness is the mountain"

(Zimmerman, 8)

If we acknowledge that there are many ways of knowing that differ from the traditional Western conception of man as supreme intelligent being, master of the world, then we can move away from control and towards balance. Zimmerman goes on to write:

This relational way of knowing also leads to an awareness of the aliveness of all parts of the web of life and to a resulting ethic of deep respect which carries with it the principle of non-interference (Ross 12). The goal of life is accommodation and respect rather than manipulation and control, and this challenge of "observing and understanding the workings of the dynamic equilibrium of which they [are] a part," and then acting in harmony with it, is an ongoing challenge which offers a lifetime of exhilarating growth in wisdom and awareness. (15)

I would argue that if we examine Indigenous Ways of Knowing and Indigenous Ways of Living in Nature with regard to our relationship with the land, we will observe that Indigenous epistemologies often view elements of life as part of an interconnected web, whereas Eurocentric scientific perspectives historically could be more focussed on the components of life (the individual organism, for instance) rather than its place in the greater system. Western scientific traditions will remove the object of study from its natural environment, placing it in the sterile environment of the lab and attempting to understand it as an individual. This is logical if your predominant culture and belief system is based on the importance of the individual over the collective.

Of course, this does not acknowledge the rich history of research within what I have referred to as the Eurocentric scientific tradition on the various ways that networks of life can be looked at

as collectives [see: Bertalanffy and Systems Theory (Van Asche et al), Verdansky's Biosphere (Gilarov), Tansley's concept of the "ecosystem" (Willis), Gaia Theory (Lovelock), and Margulis on Earth System's Science (Onori & Visconti)]. For my writing in this chapter I do not mean to discount this tradition or its continued evolution, rather I am drawing on Indigenous Ways of Knowing and land-based epistemologies which emphasize the value of the world as it is, in a natural state of balance.

It is in this sense that Indigenous people have become insightfully wise by "listening" to nature through empirical studies. In other words, Elders learn *from* birds, wind, and clouds, while scientists learn *about* them. "Everything in nature has something to teach humans."

(Aikenhead and Michell, 86)

And so I hope to take this lesson throughout my course of study on this land: to not just learn *about* the farm, but *from* it.

Part I. On the farm

Chapter I. How we got here

The development of this thesis and animated documentary runs parallel to the development of our farm in Northumberland County. The first seeds were planted in 2015 but it was in 2016 that my partner and I made the move from Montréal to rural Ontario. I had already been accepted into the Interdisciplinary Masters in Art, Media & Design at OCAD University, having proposed the very project which you are now reading. In every sense of it this thesis project served as a real time research project and reflection on the development of a pesticide free growing practice, and the challenges of transforming infertile fields into a balanced eco system.

In the spring of 2016 my partner and I were both graduating from the Film Animation Program at the Mel Hoppenheim School of Cinema. We had been living in Montréal for four years (that time around) and inspired as we were by the amazing culture, especially when it came to local food I believe we were both looking for a life with a little more space and a little more adventure.

Having grown up going out to the farm on alternate weekend and occasional holidays, visiting that space was a big part of the nearly 8 years we had spent together at the time. Every time we would leave, with one last long look out at the horizon one of us would say: “I wish there was a way we could stay.” The ultimate conclusion which brought us to education and Concordia University was that perhaps the way to stay was to cultivate a freelance practice in

animation, and so freshly graduated, without any real clients to speak of, we packed our things moved from Montréal out to my family's farm in Northumberland County, Ontario, and started our business: Cardboard Reality Farm & Studio.

As I mentioned in the introduction, as young artists we had the experience of getting to collaborate with Peter Schumann and the company at Bread and Puppet Theater in Vermont. As animators we had also been closely following and inspired by the work of Northern California studio Encyclopedia Pictura (Kalish) who was working to create high tech digital media and simultaneously building an off grid tiny house village in the hills near Aptos, California called Trout Gulch. The idea that one could be both, living off the land but working in digital media was novel and somehow optimistic. While Encyclopedia Pictura no longer inhabits their permaculture project, instead focussing on development of children's tv shows and DIY augmented reality (Sager) the spirit of their project went on to inspire ours.

Indeed the idea of building what could eventually become a studio and off grid education centre, in a serene setting surrounded by birds and trees and all these living things that we were meant be around really was the initial idea. At Bread and Puppet there was a garden, but it was small in scale, subsidized for feeding the company by donations of less-than-perfect produce from neighbouring farmers. We wanted to take it one step further, to be not a studio on a farm but a farm and a studio.

Art is food, you can't eat it but it feeds you.

(Bread & Puppet Theater)

I was inspired by the writings of Emerson & Thoreau, by the idea of going into the woods and emerging a full person. I loved the ways in which *Walden* is at once an account of life in nature and a guide for how one lived it. Thoreau writes as eloquently about his harvest of beans as he does of the moments of silence and sweet fire lit meditation.

I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived.

(Thoreau, 74)

I wanted to learn about all of life's paces, about what things grew at what speeds and how they did so. I had no idea what kind of a plant a cucumber grew on, or that they had tiny spines on them that someone had to remove before they made it to my table. I didn't know how to prune tomatoes or recognize seedlings as they sprouted. We would crawl through the dirt, noses almost pressed to the ground asking each other "Is this a plant, or this?" It became a journey in learning a new visual vocabulary, one more important but somehow more distant than the brand logos I was accustomed to dotting my horizon.

And finally I felt that my work could be connected to the poets and writers before me who found a love and appreciation for the natural world through parallel practices in the science. Sylvia Plath and her love of beekeeping (Kilkenny), for example, and the role those bees played in her prose. Or Emily Dickinson's inspiring and exacting herbarium, a collection of every wild

and beautiful plant, lovingly pressed and labelled by hand, that grew around her. (Dickinson)

The flowers are as delicate as her words, and the selection as wide as her work. And finally I wanted to look to Children's author, Beatrix Potter, an amateur mycologist and scientific illustrator who bought the farm she used to visit as a girl on her own, and lived there writing of its inhabitants. (Lear) These women artists were acting as translators, sharing an understanding of the natural world through human poetry and human illustration.

Chapter II. How we grew

On Modern Agriculture

“Modern agriculture has thoroughly separated the agri from the culture. They’ve killed the meaning of the word—bifurcated it, completely, in just the last thirty or so years.”

Dan Barber

In his 1977 critique of the agricultural industry *The Unsettling of America: Culture & Agriculture* American author Wendell Berry writes about the long agricultural decline which was “momentarily disguised as a ‘boom.’ The big farmers were getting bigger with the help of inflated land prices and borrowed money,” when the then U.S. Secretary of Agriculture gave what Berry refers to as “the most optimistic, the most widely obeyed, and the worst advice ever given to farmers: that they should plow ‘fencerow to fencerow.’” (Berry, xi)

This was only one moment, of course in the evolution of the economy of industrial agriculture, but it was a moment that decades later would lead to, as American Chef and Writer Dan Baker put it in his book *The Third Plate: Field Notes on the Future of Food*,

Eroding soils, falling water tables for irrigation, collapsing fisheries, shrinking forests, and deteriorating grasslands represent only a handful of the environmental

problems wrought by our food system — problems that will continue to multiply with rising temperatures. (9)

Barber continues, explaining that not only is the current state of industrial agriculture a crisis of health for our farms, but indeed for ourselves:

Our health has suffered, too. Rising rates of food-borne illnesses, malnutrition, and diet-based disease such as obesity and diabetes are traced, at least in part, to our mass production of food. The warnings are clear: because we eat in a way that undermines health and abuses natural resources (to say nothing of the economic and social implications), that conventional food system can not be sustained.

Fixtures of agribusiness such as five-thousand-acre grain monocultures and bloated animal feedlots are no more the future of agriculture than eighteenth-century factories billowing black smoke are the future of manufacturing. (9)

But how did we get here? Extraction mentality and the average increase of farm size have certainly played into it. The mechanization of agriculture and the movement away from small family farms founded on diversity towards monoculture seem to be at the heart of the matter. Berry argues that the very history of European immigration to North America only serves to show us “how deeply rooted in our past is the mentality of exploitation,” (Berry, 9) and points to the differences in the last century between farmers of the past and these new agribusiness capitalists:

I conceive a strip-miner to be a model exploiter, and as a model nurturer I take the old fashioned idea or ideal of a farmer. The exploiter is a specialist, an expert; the nurturer is not. The standard of the exploiter is efficiency; the standard of the nurturer is care. The exploiter’s goal is money, profit; the nurturer’s goal is health — his land’s health, how own, his family’s, his community’s, his country’s. (9)

Our current state of industrial agriculture is controlled by the exploiter focused on producing large quantities of single commodities. Farms are no longer small plots of diversity, but deserts of monoculture, fed not by the fertility of the land, but by supplemental chemicals and inputs. The land is treated as a mine, a source of things to be extracted, rather than an organism, or a network of organisms that produces but only a certain amount and asks for sustaining inputs in return. That is to say, a mine, rather than an ecosystem.

In his 1949 essay *The Land Ethic* in his book *The Sand County Almanac: and sketches here and there*, American conservationist Aldo Leopold writes:

A system of conservation based solely on economic self interest is hopelessly lopsided. It tends to ignore, and thus eventually eliminate, many elements of the land community that lack commercial value, but are (as far as we know) essential to its healthy functioning. It assumes, falsely, I think, that the economic parts of the biotic clock will function without the uneconomic parts. (214)

The conundrum, as Leopold puts it, is that ultimately a system of conservation or land management that ignores the complex web of nature in favour of the convenience of the land owner (an increasingly small number of people feeding a larger population each year) ultimately ends up benefitting the land owner, and not the land.

The farmers, in short, have selected those remedial practices which were profitable anyhow, and ignored those which were profitable to the community, but not clearly profitable to themselves. (208)

Seventy one years after Leopold points out the flaw in contemporary land management and forty three years after Berry issues his warning about the path of current agricultural management the problem had progressed to being more than, as Berry put it “as crisis of agriculture”, indeed it is now a catastrophe. “Bigger tractors become necessary because the compacted soils are harder to work — and their greater weight further compacts the soil.” (13). We have given control over what we eat and who produces it to so-called experts, and many of us are miserable but we don’t know why. Berry suggests that the average American is now “the most unhappy average citizen in the history of the world. He has not the power to provide himself with anything but money,” and not being involved in the production of his own food, an active pursuit historically, “he is overweight, his health is poor. His air, water, and food are known to contain poisons.” (23). But most of us have little power to make change other than through conscientious consumerism, and the marketplace seems to be designed to obscure the reality of the genesis of the materials we purchase and consume. “From a cultural point of view, the movement from the farm to the city involves a radical simplification of mind and character.” (48)

The simplification that Berry is speaking of also extended beyond the individual. Whereas in the past farmers would have to concern themselves with the carrying load of their growing system, that is to say the amount that could be harvested or taken from the farm without compromising the future ability of the plot to produce, in moving away from the family farm and towards mechanized agriculture the system “evolved” so that inputs could be purchased, rather than sustained. In 1840 German chemist Justus Von Liebig first published work suggesting that by adding certain chemical elements to the soil, farmers could bypass traditional cultivation

methods for efficiency. “He reduced soil fertility to just three nutrients indispensable for plant growth: nitrogen, phosphorous, and potassium — N - P - K, in shorthand.” (Barber, 72). Rotational grazing and livestock manure production could suddenly be substituted for buyable chemical inputs - everything a farmer would need to grow crops was now available packaged and branded.

David Montgomery, in his book *Dirt: The Erosion of Civilizations*, argues that Liebig’s discovery was a pivotal point in humans’ understanding of the universe , in that it showed us how to manipulate nature: “Now a farmer just had to mix the right chemicals to catalyze plant growth replaced animal husbandry and made both crop rotations and the idea of adapting agricultural methods to the land seem quaint ... large-scale agro-chemistry became conventional farming.”

(Barber, 72)

And so the stage was set for the most massive change in human history since the outset of agriculture, farmers were no longer limited by the carrying capacity of their land, and so farms got bigger and bigger, and farmers fewer. “The number of part-time farmers and ex-farmers increases every year.” (Berry, 44). And as the predominant system changed and became accepted, so the smaller farmers on the fringe found greater challenges bringing their goods to market; for their was no market for, as Berry puts it, “minor produce: a bucket of cream, a hen, a few dozen eggs. One cannot sell milk from a few cows anymore; the law required equipment is too expensive.” (Berry, 45). In the name of agricultural progress we have displaced millions of people, taken away their livelihood, and called it a revolution. But “food is a cultural product; it cannot be produced by technology alone.” (Berry, 46) And so as our ancestors did out of necessity, so we must also return to systems that feed people sustainably, and cultures that support those systems.

On Sustainable Agriculture

“The best way to ensure a healthy plant was through healthy soil. Attend to the plants needs and it will take care of itself.”

Dan Barber

The farming aspect of my work is situated within the greater tradition of permaculture and sustainable agriculture, as part of the growing concern globally about soil degradation and environmental destruction. Permaculture is short for “permanent agriculture,” later changed to the more inclusive “permanent culture.” It is an idea that was first conceived of by Australians David Holmgren and Bill Mollison in 1978. (Korn, 145). As Maddy Harland writes in her paper on permaculture as a tool for women’s empowerment:

Permaculture design is underpinned by three ethics that set its context. These ethics are Earth Care, People Care and Fair Shares. Earth Care embraces a deep and comprehensive understanding of how we care for our Planet Earth. Though we can’t all build our own house or grow all of our own food, we can make choices about how we act and what we consume and conserve. The understanding here is that biological resources can create abundant, closed loop systems whilst fossil fuel resources are finite. We therefore need to design biological systems that mimic natural systems. (241)

Whereas contemporary sustainable agriculture often mimics the techniques of mechanized agriculture, only with fewer synthetic, or the substitution of organic inputs, still tilling and disturbing the soil structure year after year; we were interested in exploring unconventional or lost growing practices for creating an environment that embraces the natural design of an ecological network. Drawing inspiration from contemporary producers like Jean Martin Fortier

of Ferme des Quatres Temps in Québec, and his indispensable guide *The Market Gardener* we set out to attempt to turn our small plot into a small business.

But in our approach we also drew inspiration from a couple of more fringe philosophers on the subject of growing. Due to both the goal of operating with minimal fossil fuels, and a general lack of equipment or funds to purchase equipment, we dove into the world of no-till gardening, where the soil is minimally disturbed and allowed to become its own thriving culture. I was incredibly inspired by the work of Ruth Stout, pioneer of the “no work garden” who believed in creating a deep mulch garden by layering hay, straw and compost to create a system that functions like the forest floor.

The unmulched garden looks to me like some naked thing which for one reason or another would be better off with a few clothes on.

(Stout, 25)

I first encountered Ruth Stout in the same place I encountered much of the media that would come to change the trajectory of my life, on a YouTube video. The video, a short film titled *Ruth Stout's Garden* was subtitled in a Scandinavian language, from a production shot in the '70s. In it we meet Ruth Stout, in her 80s, and tour her garden. A diminutive woman dressed in wool, she casually tosses potatoes onto the ground and “thats it, the potatoes are planted.”

Similarly, we were also drawn to the work of Japanese gardener and philosopher Masanobu Fukuoka, often best known for his development of seed balls, or “clay dumplings” as he called

them, clay balls filled with compost and seeds, used to propagate plants without having to plow. His compendium of his work and farming manifesto is *One Straw Revolution* and in it he meditates on the need to move away from big mechanized agriculture and towards small farms:

Fast rather than slow, more rather than less--this flashy "development" is linked directly to society's impending collapse. It has only served to separate man from nature. Humanity must stop indulging the desire for material possessions and personal gain and move instead toward spiritual awareness.

Agriculture must change from large mechanical operations to small farms attached only to life itself. Material life and diet should be given a simple place. If this is done, work becomes pleasant, and spiritual breathing space becomes plentiful. (110)

The goal of both of these no-till practitioners was to create a self sustaining ecosystem where the farmer feeds the soil, rather than depleting it. As Dan Barber writes, “in the rush to industrialize farming, we’ve lost the understanding, implicit since the beginning of agriculture, that food is a process, a web of relationships, not an individual ingredient or commodity.” (175). Our goal is to return to the type of farming that focuses on relationships rather than crops, on connections, rather than commodities.

On Our Farm

Situated on 123 acres, 80 of which are “workable fields,” the farm was purchased by my mother in 2000 as a vacation retreat from the city. For at least the past 30 years including the tenure of the previous owners the fields had been cultivated by neighbouring farmers as mono cash crop in exchange for the plowing of the driveway and other small maintenance tasks around the property. As city folk who only occasionally visited this space for short lengths of

time the fields of corn and massive bales of hay had a pastoral charm to them, an exotic departure from our downtown Toronto home.

As an adult returning to this space, however, the charm of the tall corn stocks was overshadowed by the visible damage the crops and the inputs needed to sustain them was inflicting upon the soil, and the small ecosystems that existed along the trellises on the borders of the fields.

On the farm we have spent the past five years taking back those fields, allowing them to lie fallow, planting cover crops like clover and sunflowers, as well as wildflowers, a small orchard, and reforesting several acres. When possible we collaborated with generous friends or interns, but much of our work has been done with the energy of passion, rather than fossil fuels, and traditional hand tools, rather than machinery.

When we arrived on the farm our soil was terrible. It's clay heavy to begin with, but it was also dry and crumbly, bereft of life, and creatures. The field where we have our market garden was a hay field, so better off than the larger plots used for the cultivation of RoundUp Ready Corn and Soy, but still it was hardly a teeming meadow.

In our first growing season in 2015 a family friend that had retired to an expansive farm a couple of kilometres down the road drove his tractor along the side of the highway and came to till us a plot. This was, of course, a generous action, it takes a long time and a lot of fuel to move a tractor from farm to farm and we had nothing to offer but our thanks and the youthful



Figure 3. View of the garden in 2017

or at least discernible plots. This approach turned the garden into a mess - a barnyard with vegetables peeking out. But it was a dry year and without question the method helped us to retain moisture during a drought. Plus, concerned about the contents of the mystery manure we had moved away from using external inputs - a problem we would later remedy with the introduction of a flock of Indian Runner Ducks - our little manure producers and slugs and bug control for the farm.

We started selling at Market in 2017 and for the two years we continue to deposit hay, compost, wood ash and duck manure throughout the garden. I occasionally work as a barista

at the small town coffee shop, and in realizing the coffee grounds are going straight to landfill, begin collecting them as a source of nutrients.

In 2019 we became inspired by the *Back to Eden* method of growing, and took one further step towards creating a garden that mimics the first floor by starting to cover the entire 1/4 acres plot in wood chips. The farm forms relationships with local arborists who deliver the landfill bound materials unsorted (sometimes with job site detritus, cans and things, and logs mixed in), and moves them by garbage pail and wheelbarrow. It is exhausting work. We are fortunate to have a friend join us as an intern from August to October, but really it feels like this is work for a community, not a couple.



Figure 4. View of the Garden in 2019

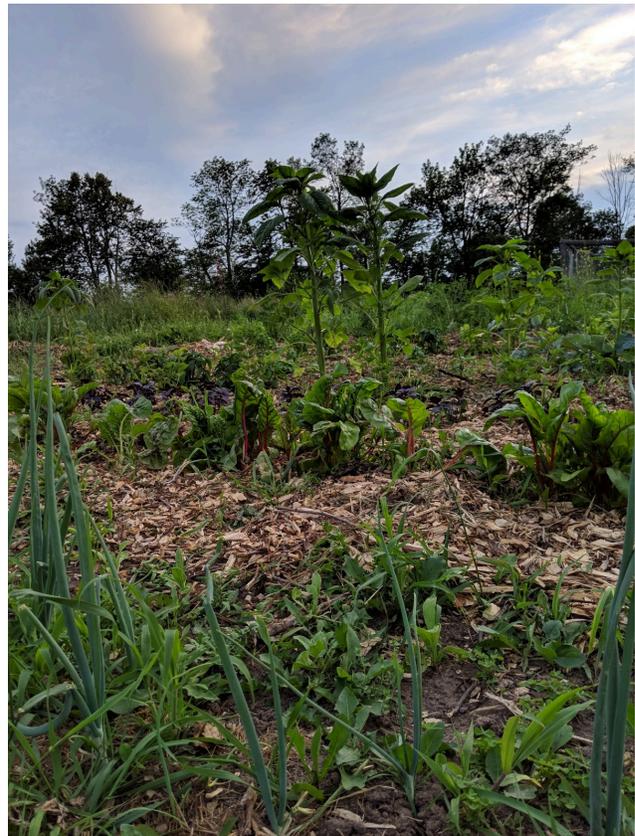


Figure 5. Detail view of the Garden in 2019

We read and try things out and learn. What we don't find in books or papers we learn from forums and YouTube videos. The challenges change, but the garden always grows.

Now our soil is rich, teeming with life: insects, fungi and microorganisms. Over the years we have seen wildlife returning to the land, it started with fireflies and dragonflies, but the farm is now a host for a wide array of indigenous plants and animals.

In a sense, just as my writing style and art practice has been influenced by Le Guin's concepts, so has the garden. It is not a neat and tidy place. It too is a collage of growing styles, soil types, crops, approaches and artwork. The garden is a research project, but the garden is also an art project, and a practice.



Figure 6. View of the Farmhouse and Garden 2018

Chapter III. Mistakes and Triumphs (Lessons)

Being a part time student while starting a farm is a daunting task, and I do not know that I would recommend it. Adding to that the stress of starting a small business and deadlines with freelance clients certainly created a pressure cooker for this endeavour.

In 2017, 2018 and 2019 I spent every Saturday in the summer harvesting from the garden, packing everything into the car, and setting up a small booth at market. Our first year at market I drove our goods into the city for the new and now defunct Lisgar Park Market, located across from the Drake Hotel on Queen Street West in Toronto, where I stood on the street corner with three other vendors and tried to sell artwork, sunflowers and tomatoes to passers-by.



Figure 7. bekkyy at Lisgar Park Market 2017

Most days it cost more for parking than I made, and it was amazing how many people would pick up tomatoes, squeeze them, and then say “ah, I’ll just buy some from the grocery store later.” It was infuriating at times, but a good lesson in patience and the marketplace.



Figure 8. Stall at Cobourg Farmer’s Market



Figure 9. Heirloom Squash

In 2018 I came to the conclusion that everyone in Toronto was leaving the city on weekends, so I should stay where I was and sell at local markets. I started out the season with three: Wednesdays in Port Hope, Fridays in Warkworth and Saturdays, the big day, in Cobourg. I felt like I was living in the car. By the end of the season it was only Fridays and Saturdays, but the farm was growing, and we were contracted to grow a massive amount of squash for a large Fete Champêtre themed fundraiser for Montreal’s Musée des Beaux Arts. The bounty was enormous, and generously we were allowed to take the leftover squash that had not been taken as party favours to resell at market.

I had spent a good deal of time at market painting custom greeting cards, and at that time, most of what I was selling from the small booth was artwork. Chasing blow away cards every windy day, or rescuing artwork from the rain was exhausting, and the end of summer was approaching when I learned of a very small, but potentially affordable space downtown on Cobourg's main street.



Figure 10. Cardboard Reality Shop in Cobourg

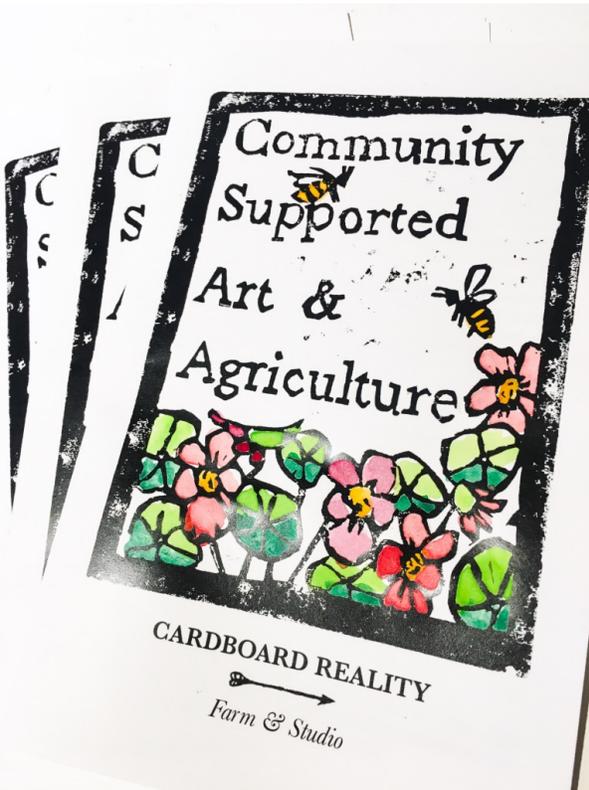


Figure 11. C.S.A.A. Artwork

At the time downtown Cobourg was a food desert with regards to groceries (a no waste grocery store has since opened down the street) and we saw an opportunity to finally separate our studio work from home while also placing our goods in a central location where we would not have to schlep everything to market multiple times per week. We opened in December and

sent most customers home with large squash for Christmas dinner. Feeding people on that scale felt amazing, a culmination of the years of work.

Through the winter we conceived of a new model, based on the popular C.S.A. short for Community Supported Agriculture, we would call our program a C.S.A.A. - Community Supported Art & Agriculture, and would provide fresh vegetables, fruits, herbs and flowers from the garden alongside a new piece of art from the studio; be it a print, a card or a patch, for 20 consecutive weeks through the summer.



Figure 12. Heirloom Tomatoes

The growing season in 2019 started with a cold wet spring and ended abruptly with a hard frost in October. We had hoped to be able to find more help, or some equipment as we scaled up our operations and prepared to feed the 27 families that had subscribed to the program. It was exhausting and challenging, but we were successful. Not all customers were happy, and with three pickup days a week (including one drop off for subscribers in Toronto) I was more than burnt out at the end of it. But there was something very special, not only of seeing what my partner and intern were able to produce on the farm while I tended shop, but about the packaging and ritual of seeing these same faces each week, talking to them about what was happening in the garden and why, and sharing offerings - sometimes plentiful sometimes small, of what we had. It felt, for a moment that we could create agricultural systems which again could function outside of capitalism - but the truth is most people want their cabbages to be a certain size, and their dollars to be worth what they think, not what the land offers.

Certainly there were elements of risk to our business. The tremendous amount of pressure that gets put onto two individuals doing this kind of work, and the stress they share over uncontrollable elements like the weather, the season or personal tastes of your community is challenging. Plus building two businesses, linked, but from the ground up at the same time (while one participant is writing about the work on the side academically) means a lot of projects overlapped in uncomfortable ways. Sometimes it was hard to deal with duck emergencies, of which there were many, or veterinary visits with farm dogs, or the unpleasantness of life and death on the farm. But the truth is, doing this exhausting work made me feel alive in a way that editing a film or answering phones for a non-profit never did. Food, after all, is the first wealth, and we were fortunate to learn ways to share it.

I believe the significance of the work to the agricultural world will be in the recording of the establishment of a no-till market garden that makes use of minimal tools, few external inputs, and presents an exhausting but viable model for how young farmers might start up an endeavour on a piece of land to feed their communities. But the truth is, we have only just started this project, it can take decades and generations to start a farm. Each year we grow and evolve, and each year the farm does too.



Figure 13. The Garden in Full Bloom



Figure 14. Harvesting Veggies

Chapter IV. Symphony of the Harvest / What does a garden know?

“Once we see our place, our part of the world, as *surrounding* us, we have already made a profound division between it and ourselves. We have given up the understanding — dropped it out of our language and so out of our thought — that we and our country create one another, depend on one another, are literally part of one another; that our land passes in and out of our bodies just as our bodies pass in and out of our land; that as we and our land are part of one another, so all who are living as neighbours here, human and plant and animal, are part of one another, and so cannot possibly flourish alone; that, therefore, our culture must be our response to our place, our culture and our place are images of each other and inseparable from each other, and so neither can be better than the other.”

Wendell Berry

If we are to acknowledge that mechanized, chemical or so-called “conventional agriculture” does not work as a long-term solution because of its environmental implications and commodity based focus, what approach can be taken in the future? In the relatively short history of this major change in agricultural practice we have seen environmental degradation that is unparalleled in human history. And so we must assume that there is *something* that existed in historical approaches to the cultivation of food that we have left out. Berry, above, argues that thing is connection, the complex webs comprised of biodiversity in a living system. If we look at a system as something alive, something that is greater than the sum of its parts it is also important to look to the parts and how they contribute to the functioning of the system.

When I set out to do this study, and to create a living space that is as much about the life of the space as the life it produced, I asked *What does a garden know?* To reformulate that question in a way that is less broad what I really wanted to ask was this:

In what ways are individual elements of (or participants in) an ecosystem conscious or sentient of the world around them and the complexity of their relationships, and how has our human-centred understanding of knowledge limited our understanding of the importance of these interconnections?

And so through this work I set out to investigate the nature of the divisions we have imposed between humans and animals, and between animals and plants, to explore and analyze the character of ecosystems with regards to any interconnections or consciousness between the soil, plants, animals, humans; and finally, to determine to what extent we can replicate these interconnections in an artificial or controlled network (i.e. a farm) as opposed to in nature (i.e. an old growth forest)?

Through this investigation I have looked to animal and plant consciousness theories as a framework for understanding what has gone wrong with the predominant model of designing farms, and also to the field of post-humanism, aiming to look at the state of a garden's being as being something that is beyond landscape.

Aldo Leopold, in his 1949 essay *The Land Ethic* introduces a concept for community which extends beyond relationships between humans.

The Community Concept

All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in the community, but his ethics prompt him to co-operate (perhaps in order that there may be a place to compete for).

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land. (203)

If we can regard soils, water, plants and animals as valued members of our community, it would serve us to better understand the roles they play, and perhaps the way they (if they do) experience life on our planet.

Land, then, is not merely soil; it is a fountain of energy flowing through a circuit of soil, plants, and animals. Food chains are living channels which conduct energy upward; death and decay return it to the soil.” (216)

As German Author and Forestry manager Peter Wohlleben writes in his book *The Hidden Life of Trees: What They Feel, How They Communicate*, trees, and I would extrapolate to include plants, are challenging for us to understand because they live at such a different time scale from us.

Trees are social beings. They will feed neighbouring trees, sometimes keeping stumps of felled neighbours alive for decades “by fungal networks around the root tips — which facilitate nutrient exchange between trees — or the roots themselves may be interconnected ... It appears that nutrient exchange and helping neighbours in times of need is the rule, and this leads to the conclusion that forests are super organisms with interconnections like ant colonies.” (Wohlleben, 3). But why are they working together? The answer Wohlleben brings to the table is simple but efficient: “a tree is not a forest.” Alone, a single tree does not have the power to create stable climate, store water, deal with wind and temperature change; in

short, organisms ourselves and trees included, need ecosystems to not only survive, but to thrive.

Fungi are the connectors in this system.

Over centuries, a single fungus can cover many square miles and network an entire forest. The fungal connections transmit signals from one tree to the next, helping the trees exchange news about insects, drought, and other dangers. Science has adopted a term first coined by the journal *Nature* for Dr. Simard's discovery of the "wood wide web" pervading our forests.

(Wohlleben, 11)

But those enslaved by agriculture have stopped communicating,

When we step into farm fields, the vegetation becomes very quiet. Thanks to selective breeding, our cultivated plants have, for the most part, lost their ability to communicate above or below ground. Isolated by their silence, they are easy prey for insect pests. That is one reason why modern agriculture uses so many pesticides. Perhaps farmers can learn from the forests and breed a little more wildness back into their grain and potatoes so that they'll be more talkative in the future.

(Wohlleben, 12)

Clearly we are not the only organisms that benefit from a more diverse system of life. Plants experience the world in different terms and times than we do, but their experiences can be compared in some ways to our own. In *What a Plant Knows: A Field Guide to the Senses* Daniel Chamovitz writes that although they do not have eyes, a plant can see you:

In fact, plants monitor the visible environment all the time. Plants can see if you come near them; they know when you stand over them. They know if you're wearing

a blue or a red shirt. They know if you've painted your house or if you've moved their pots from one side of the room to the other. (9)

Of course, they do not see "in 'pictures' as you or I do" (9) but their photoreceptors can detect light, colour, and through this sense understand the seasons, where they should be in their growth cycle. They lack a nervous system, but can still interact with their larger environment. Plants can smell. "Plants obviously emit odours that animals and human beings are attracted to, but they also sense their *own* odours and those of neighbouring plants." (27). They are aware of if a neighbouring plant is cut, or being devoured by insects, or even when their own fruit is ripe.

And plants can feel - they "know when they're being touched ... can differentiate between hot and cold, and know when their branches are swaying in the wind." (50). They know where they are in space, and scientists have documented that when a plant has been turned upside down, "it will reorient itself in a slow-motion maneuver — like when a cat is falling and rights itself before it lands — so that roots grow down and shoots grow up." (92)

Finally, a plant remembers. The growth patterns of new leaves and shoots following an injury will reflect where the injury occurred (120) and while we do not know where they store learned information, nor how they access it, we do know they can learn. Research trials with Mimosa or "sensitive plants" have been performed in which the plant, sensitive to touch as its name suggests, had water dropped upon its leaves. Initially the plant retraced its leaves, but open learning that there was no danger from the drops, stopped closing them - keeping the new

information even weeks later without additional trials. (Wohlleben, 131). There is also evidence to suggest:

The idea of stress leading to memories that are passed down from one generation to the next is supported by an increasing number of studies, not only in plants but in animals as well. In all cases, this “memory” is based on some form of epigenetic heredity.

(Chamovitz, 131)

It is perhaps more accepted now that animals too, have thoughts and emotions and move through the world in ways that are similar to human beings. The thought that we evolved from animals is widely accepted, but few choose to meditate on the ways that we are still animals and the “human” qualities we see in other species are no great coincidence.

In his second book *The Inner Life of Animals: Love, Grief, And Compassion — Surprising Observations of a Hidden World*, Peter Wohlleben writes that he has “often heard that there’s no point in comparing animal and human emotions, because animals act and feel instinctively, whereas humans act consciously.” (13) But, he points out, anyone who has ever accidentally burned their hand on a hot stove will know that humans are not free from instinctive behaviour at all. “The question is simply the extent to which instincts determine what we do every day.” (13)

But the truth is, many of the things we see as motivated by emotion can be traced to instinct, take motherhood for instance, it is in the nature of a parent, especially a mammalian parent, to nurture their young to ensure the survival of the species. Is our motherhood really that different than another animal's?

Emotions are linked to the unconscious part of the brain, not the conscious part. If animals lacked consciousness all that would mean is that they would be unable to have thoughts. But every species of animal experiences unconscious brain activity, and because this activity directs how the animal interacts with the world, every animal must also have emotions. (15)

And so how are we different than animals? One might argue that a case could be made for the choice to raise a child, specifically looking at adoption, as a way in which we are different from our distant cousins. But Woehlleben looks to a study of red squirrels, performed over decades in the Yukon where forest rangers observed no less than 5 confirmed cases of adoption. "Admittedly, each case involved squirrel babies of a close family member being raised by another female." (15)

We have heard many stories of animals expressing thanks to those who have saved them from harrowing experiences. Animals feel gratitude. Pigeons trained to recognize cards with abstract patterns "could differentiate between a staggering 725 different images. (92). Animals can learn. Anyone with a pet will report that their furry friend takes time to do things, run around or jump just for the joy of it. Animals play. "Ravens cultivate lifelong relationships" and communicate with each other over distances by calling their distinct names. "These inky black birds can master more than eighty different calls, a raven vocabulary if you will." Animals communicate, form relationships. Wild boars in France will swim across the river to Geneva

where wild boar hunting has been banned. Animals can fear, and can remember. And animals grieve.

There are times, however, when disaster strikes the alpha doe, for example when her fawn dies. In earlier times, the cause of death was usually disease or a hungry wolf. These days it is often a blast from a hunter's gun. For deer, the same process is set in motion as for us. First, unbelievable confusion reigns, and then grief sets in ... Grief helps them say goodbye. The bond between doe and fawn is so intense it cannot be severed from one moment to the next. The doe must slowly accept that her child is dead and she must distance herself from the tiny corpse. Over and over again, she returns to the spot where her child died and calls for her fawn, even if the hunter has carried it away.

(114)

Insects too will experience territories a little more human than one might expect. "Fruit flies twitch their legs right before they fall asleep, and their brain is particularly active while they are sleeping — another parallel with mammals. Does this mean that fruit flies dream?" (202)

Another thing we see amplified in insects is crowd intelligence, take the beehive for instance:

Scientists recognize the bees' accomplishments, but because, in their opinion, small insect brains are unable to rise to intellectual heights, the individual bees are considered to be components of a superorganism and their cognitive accomplishment is called crowd intelligence. In such an organism, all the animals are like cells working together in a much larger body. Whereas the individual animals are considered to be quite stupid, the interaction of the different processes, as well as the ability of the whole to react to stimuli around it, is recognized as intelligent.

...

Whatever we think, it's all the same to bees. And since I've been keeping bees I know that point of view is incorrect, because there's a lot more going on inside of their little heads. (83)

Woehlleben continues to say that bees remember people, are more aggressive to those who have bothered them in the past. Bees fly out and make complicated flight maps of their

journeys, will communicate with each other through dances about where the sweetest nectar is, can recalculate flight plans and remember. And so perhaps bees are a little more complicated than we have made them out to be. Perhaps bees are intelligent individuals which makes up a larger intelligent collective of the hive or the colony which contributes to the larger intelligent organism that is the garden. Each being, from microbe to plant, fungi or animal plays a role. And each intelligence is different. We are varied and the diversity is what makes the garden strong.

If we are to look at our surrounding place in nature not as separate from us, but as a whole in which we play a part, then, as Aldo Leopold suggests, “a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it”. (204). The garden knows things we do not, but we are part of the garden.

Part II. On the film

Chapter V. Documentary as lived experience (Methodology)

This work has been an exercise in how to make a film about an adventure that is ongoing. As I write the ducks still need to be fed, the dogs walked and taken to their work station for the day and the seeds ordered for next year's growing season. The farm doesn't end in the winter, though the labour does slow down.

In the recording of reference video and notes for the film the story has changed a hundred times and still when I have the thought that I don't have enough footage to finish the project I must remind myself that I can go take some more because I am still living the story. There was an early draft of my script for the film in which I lamented the mistake of letting out the feral cat that had come to stay with us because he never came back and was likely eaten by a fox. Three days after I recorded the scratch track the cat came back. Life on the farm is surprising.

Perhaps it is tenuous at all to call something a documentary that is more a journal entry than an unbiased factual account. Instead I aim to present a collection of lessons, moments of discovery and transformation, connections between the the multiple disciplines involved in the project, the arts and sciences, and the ways in which the path of discovery transformed my work, both on the farm and in the studio, and me.

Over the course of the past four years I have been recording this journey through journals and sketchbooks, essays and blog posts, and through video and photos. My personal methods include Autoethnography and Practice-Based Research, in addition to illustrative journaling, inspired very much by the work of Lynda Barry. In her book *What It Is* I was inspired by Barry's reflections on creativity, where it comes from, and how we can make use of it to tell personal stories. Barry combines drawing, writing, and pattern making, quilting her work into legal pads and cutting and pasting. Her collage methodology inspired my own, my sketchbooks from the past four years laden with clipped out pieces of paper, experiments with ink, seed packets and remembering.



Today all the snow melted and when I looked out the screen door the ducks were playing king of the mountain on the pile of manure.

Figure 15. Lamp Black & Duck Egg Ink Illustration

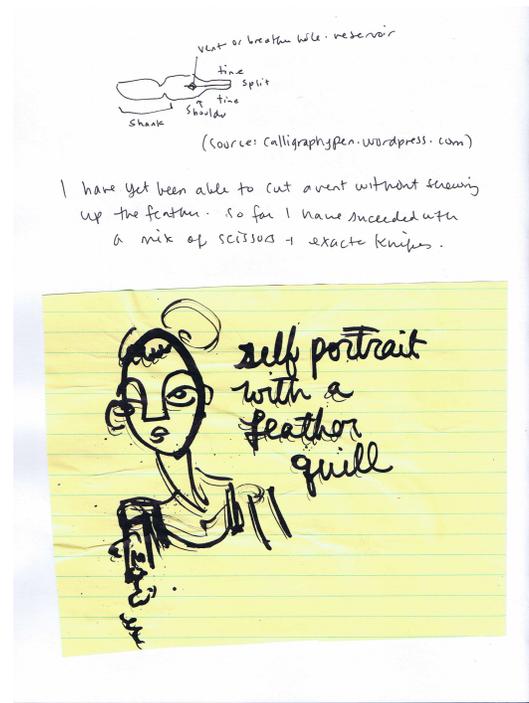


Figure 16. Sketchbook Page

In my writing about my work, I have employed Autoethnography as a way of exploring my experiences, both starting a farm and simultaneously making a film about it, as a way to explore my experiences and their relevance to this course of study.

Autoethnography is an approach to research and writing that seeks to describe and systematically analyze personal experience in order to understand cultural experience. This approach challenges canonical ways of doing research and representing others and treats research as a political, socially-just and socially conscious act. A researcher uses tenets of of autobiography and ethnography to do and write auto ethnography. Thus, as a method, autoethnography is both process and product.

(Ellis et al., 1)

I appreciate that throughout this process there have been discoveries that extend beyond the realm of fact, or truth, and into the realm of feelings and emotions. In creating a personal autobiographical film I have chosen to employ this methodology because “Autoethnography is one of the approaches that acknowledges and accommodates subjectivity, emotionality, and the researcher’s influence on research, rather than hiding from these matters or assuming that they don’t exist.” (Ellis et al.)

The other aspect of my work, that is often integral to any graduate work in the fine arts, is that my research is practice based. “Stated simply, practice-based research is an original investigation undertaken in order to gain new knowledge ... research and the practice operate as interdependent and complementary processes.” (Candy and Edmonds, 63). In the case of this thesis the practice(s) leading my research has been two-fold: the first is my practice as a maker of art objects and animated films, and second is my practice as a grower, working in the garden and turning the theory of my research into tangible farm production. “Above all, ‘practice’ connotes *doing* something that extends beyond everyday thinking into actions that may lead to new outcomes. Thus *practice* involves taking those ideas further by realizing them in some way.” (64)

Additionally I have been documenting this project through video, photographs, and written accounts since the garden was little more than an empty plot in the middle of a hay field. Five years later, the archive is a complete, albeit artistic record of the work from conception to now. The question next, was how to use these materials to create a cohesive story in the form of an animated nonfiction film.

Chapter VI. The carrier bag theory of (non)fiction

How can a collage methodology be used to represent collecting or gathering in a documentary practice, transforming storytelling into a process of foraging and editing?

I am interested in creating work that functions outside of traditional narrative structures, with their focus on the conquest of the hero and their linear journey. Instead I am opting to explore these themes of ecological networks and consciousness through a feminist framework that examines perspectives both on history and storytelling.

In looking at how I might apply Barry's collage methodology to filmmaking to make work that explores the natural world from a feminist perspective, I am drawn, as was writer and theorist Donna Haraway to Ursula K. Le Guin's *Carrier Bag Theory of Fiction* as a structural framework in which to examine these ethical concerns.

[Ursula K. Le Guin's] theories, her stories, are capacious bags for collecting, carrying, and telling the stuff of living. "A leaf a gourd a shell a net a bag a sling a sack a bottle a pot a box a container. A holder. A recipient."

(Haraway, 118)

Haraway here is interested in the same aspect of Le Guin's seminal essay as I was. That the first invention of human kind would be, rather than a weapon, a container for collecting, which would be far less likely to withstand the test of time than say an arrowhead, but of equal or

greater importance now seems inevitable to me. The story of the hunter and the kill is dynamic, but is, Le Guin points out, very flashy and very male. She writes that she did not connect to the narrative that what made us different or culturally distinct from other life forms on this planet was that we had the ability to hit something with a big stick, but:

If it is a human thing to do to put something you want, because it's useful, edible, or beautiful, into a bag, or a basket, or a bit of rolled bark or leaf, or a net woven of your own hair, or what have you, and then take it home with you, home being another, larger kind of pouch or bag, a container for people, and then later on you take it out and eat it or share it or store it up for winter in a solid container or put it in the medicine bundle or the shrine or the museum, the holy place, the area that contains what is sacred, and then next day you probably do much the same again--if to do that is human, if that's what it takes, then I am a human being after all. Fully, freely, gladly, for the first time. (152)

On the subject of the translation of this epiphany into her own artistic practice, she goes on to say:

I would go so far as to say that the natural, proper, fitting shape of the novel might be that of a sack, a bag. A book holds words. Words hold things. They bear meanings. A novel is a medicine bundle, holding things in a particular, powerful relation to one another and to us. (153)

I have worked to construct a film much in the same way Le Guin set out to construct a novel. By foraging and gathering little elements to later weave into a larger narrative.

In asking my central research question "What does a garden know?" I also must ask myself what are the ways I can collect this information? I can read books on plant sentience, or base

the happiness of a plant on how well it bears fruit, or how well it turns its face to the sun. I can follow my ducks around and observe how they know where to forage for the best slugs. I can compare the productivity, of the number of dragonflies from one year to the other. There are many types of research, and each may lead me to a different conclusion.

A film is a pouch, and it is my job as a director, and specifically as a director aiming to create accessible documentary content, to fill that pouch with as many small pieces of truth about my experience, and my research, and to present it to an audience as one might present a small gift box, for them to open and unwrap and hopefully find inside something they did not know they wanted.

Chapter VII. Animation. Abstraction.

Why Animation?

Years ago as a young anglophone theatre artist living and studying in Montreal I fell in love with the universality of puppetry. As a playwrighting student obsessed with text, the concept of a theatre without or beyond words was at once terrifying and freeing. It was my love of puppetry that lead me to Vermont's Bread and Puppet Theater, where I learned that people were willing to listen to puppets say things that they would never listen to other people or performers say. The puppet was a peace offering. The abstraction of the human (or animal) form into a moveable art piece was an olive branch. Like wearing a clown nose, the puppet disarmed the audience. And the theatre creator could use that moment to access something essential in them.

I came to animation through puppetry, exploring a desire to create work that would last after the curtain fell. The beautiful impermanence and shared experience that first drew me to the theatre is also why I said goodbye, selling tickets was a fickle way to make a living, and I couldn't help but feel that perhaps there was a greater audience out there for my work, only they didn't happen to live in the same place and be free on the same night of the week as me. I came to animation because it was a way to animate objects, and allow that work to go out into the world on its own timeline. Like theatre it was a way of creating worlds, but unlike theatre I could essentially do the bulk of the work myself, functioning as an auteur style filmmaker rather than a director collaborating with a cast and crew.

Scott Macleod points out the same phenomenon in his essential take on the illustrative art form *Understanding Comics*, indicating that the greater the abstraction of a face, the greater the relate-ability. (Macleod)

I am drawn to using my animation skills in the creation of documentary media because I am interested in the ways that personal stories can translate into the realm of universal.

After falling down the stop motion rabbit hole, I eventually embraced different modes of animated filmmaking, inspired greatly by the auteur filmmakers of the National Film Board of Canada, and their legacy with regards to the applications of unique styles of both illustration and storytelling. I am particularly fond of the ink and paint work of Michèle Cornouyer, the under camera worlds of Wendy Tilby & Amanda Forbis, the sketches and movements of Ryan Larkin, and the scale of Claude Cloutier's work. Outside of the NFB I was drawn to short films I found online and at film festivals: from Jeff Scher's transformative rotoscope sketches to Jonathan Hodgson's mixed media animations and Lynn Tomlinson's incredible under camera work. Frédéric Back's *The Man Who Planted Trees*, with its allegorical environmental message and soft execution in pencil crayon was one of the films that made me want to be an animator. And finally, the historic work of Norman McLaren and Evelyn Lambart, the first lady of Canadian animation, are the films I grew up on.

Many of these filmmakers work to combine different styles in their filmmaking approach, and many of them change their chosen medium from one film to the next, sometimes from one frame to the next. I love that in each piece of these works the hand of the artists is visible, whether be in smudges of ink, shading from frame to frame, to the manual manipulation of

under camera elements. (In Tomlinson's work the very fingerprints of the artist are visible.) These artists are each creators of visual poetry, allowing their line work to speak just as loudly as any sound design.

Like all good films, my favourite animations examine our place in the world, and sometimes how to be better.

Animated Documentary

In creating work that is self defined as an animated documentary it feels essential to look at Bill Nichol's documentary modes introduced in his 1983 essay *The Voice of Documentary*, and where my work fits in. Is it reflexive or performative? Film theorist Christina Formenti argues that Nichols never acknowledged animated documentary as a documentary form in his account of the modes of documentary filmmaking, but in the years since his work was first written other scholars have theorized about where this form of hybrid filmmaking might fit.

Indeed, first of all, even if animated documentaries recount events that have effectively occurred, such events are *re-enacted* for the camera by 'fabricated' actors. Therefore, these films share with historical fiction the problem of finding themselves 'with a body too many', whose presence alone 'testifies to a gap between the text and the life to which it refers'.

(Formenti,104)

This framing of the creation of hand-drawn-content based on events as documentary is one that seems to draw ire from critics, but I think it is one that is worth expanding on. Namely it is key to recognize that all films are constructed, whether they present themselves as such or not.

An example of this outside of the world of animated filmmaking is Bill Nichols' acknowledgement in the description of reflexive documentary filmmaking in his *Documentary Modes of Representation*:

Reflexive documentary arose from a desire to make the conventions of representation themselves more apparent and to challenge the impression of reality which the other three modes normally conveyed unproblematically. It is the most self-aware mode; it uses many of the same devices as other documentaries but sets them on edge so the viewer's attention is drawn to the device as well as the effect. (1991, 33)

I am aware that throughout my research process I have perhaps put undue focus on the shortcomings of traditional documentary film, which, like in any "objective" art form that can never truly be objective, are many, rather than the affordances of the animated documentary as its own genre or toolset for telling stories about real events.

In *The Documentary Film Book*, editor Brian Winston points out that:

Paradoxically, far from its 'claim on the real' being wiped out by the digital, the documentary can be liberated from its traditional prison house of photographic observationalism. If documentary value is more a matter of witness than of a supposed evidential quality of the photographic image (anyway in the digital era a totally unsustainable proposition), then witness can be illustrated by non photographic (as well as photographic) means: even - say - by animation. (73)

In the essay *Drawn From Life: The Animated Documentary* Andy Glynn points out that animation has been used as a tactic in documentary filmmaking since the outset of the medium, from early animator Winsor McCay's *Sinking of the Lusitania* to "public service information films", propaganda and numerous infographics. But aside from its illustrative

capacities, there are several ways in which animated films can excel at communicating elements of documentary content. One, Glynn points out is the ways in which animation can “add another dimension to a narrative and give it a way to build bridges between the external world (of things, people and objects) and the internal one (of memories, thoughts and feelings.)”. (74). Animation, he goes on to say “can give us an increased sense of access into subjective experiences, memories, emotions, thoughts and perceptions.” (74) The other space where the animated documentary really excels, according to Glynn, is “when you’re trying to film the unfilmable.” (75) For my process in the span of the creation of this thesis film I was also interested in the unique way working frame by frame plays with time.

Animation, as an inherently time based medium, has the capacity to capture the passage of time in ways that are radically different from live action filmmaking. The growing of plants, or the transformation of a space, for example, can be captured or represented in ways that are invisible to the eye, as can very fast elements - like the flapping of a honey bee’s wings. Working frame by frame in film, rather than sequence by sequence also limits the scope of the project to what is manageable for one filmmaker to achieve in a year with regards to length of the film. As I animate at twelve frames per second, the final film, at least in its animated aspects could not realistically have a final length in excess of five minutes. Working at 12 frames per second a five minute film is comprised of 3600 images.

Unlike live action documentary filmmaking, where a director may choose to include additional footage for the benefit of storytelling or clarity, the role of the animated documentary director is as much that of an editor as of an illustrator — selecting only small moments and working,

much as William Carlos Williams did with poetry, overwriting and later washing words with acid (Good, 130) in order to distill the message to its purest and most concise form.

In our modern world, one advantage of working with the medium of the animated short is the accessibility the length of the project affords, especially with regards to techniques for its distribution, and the average attention span of someone browsing on social media. The final work will be submitted to film festivals around the world initially, but following its release will be freely available online for any interested audience.

Chapter VIII. Interdisciplinary: Animated Documentary / Agricultural Documentary

Before embarking on the creation of an animated documentary film about the creation of an organic farm, I spent time reviewing both animated documentaries and films on the subject of agriculture. Over the course of this chapter I will briefly discuss some of the films I was influenced by, and tactics from their production that I chose to work into my own film. I will begin by taking a look at a selection of animated documentaries, followed by a selection of agricultural documentaries.

Animated Documentary

In approaching the creation of my final thesis film I spent time watching a number of animated documentaries, both short form and feature length to look at the means they employed for telling through stories through the animated image.

The films I watched can be divided into four core categories: those that aim to recreate something that can not be seen, those that illustrate verbatim or archival audio recordings, those with a focus on storytelling or interpreting the past, and those that explore the real world in images, augmenting reality frame by frame by tracing over video or pixelation.

Showing an audience something impossible or recreating what can't be seen is the earliest example we see of the use of the animated documentary. Both Winsor McCay's 1918 *The Sinking of the Lusitania* and Walt Disney's 1943 *Victory Through Air Power* are examples of

this. McCay uses animation to depict one of the greatest maritime disasters of the era, while Disney used animation to portray war during wartime, and while simultaneously creating propaganda films for the U.S. Government, created this feature to convince America of the importance of investing in aeronautical technology. In adapting a book of the same title to animation, Disney was able to reach a wider audience and impact the trajectory of U.S. military technology during World War 2.

The second sort of animated documentary, which illustrates verbatim audio often aims to bring life to a recording by amplifying character attributes or metaphorical aspects of the text. Three examples of such films would be Chris Landreth's *Ryan* about NFB filmmaker Ryan Larkin, in which Landreth animates over a recorded conversation between himself and Larkin. The form of the characters is not realistic, instead character attributes are represented in their physical manifestations, with exaggerated characteristics. *Ryan* is a portrait of a man in decline, an artist who is not in control of this moment in his life. Landreth does so with striking 3D visuals, weaving together Larkin's work with the warped characters in this world.

Another example of an animated documentary that illustrates verbatim audio is Michel Gondry's *Is The Man Who Is Tall Happy?* in which he animates a conversation with philosopher and theorist Noam Chomsky. Gondry uses animation to make playful their discussion, similar in structure to Landreth's *Ryan*, and also uses animation to illustrate some of the concepts that Chomsky discusses. Finally, I looked to Josh Raskin's *I Met The Walrus* in which a young Jerry Levitan interviews John Lennon on a reel to reel tape recorder. The graphics both illustrate the concepts Lennon speaks about, and plays on the dynamic between the teenaged

Levitan and rock icon Lennon, brought together for just a few moments because of chance and a young man's tenacity. This film really effectively captures the zeitgeist of the late '60s, but does so in a clear and modern style. All three of these films use illustration styles that mirror the subjects of the documentary work.

The third sort of animated documentaries I looked at were those that used animation for storytelling as a means to interpret the past. One example is Ann Marie Fleming's *I Was a Child of Holocaust Survivors*, based on Bernice Eisenstein's graphic autobiography of the same name. Like the first set of films the work aims to illustrate something that could not be filmed (one family's experience during the Holocaust) but it moves further by exploring a personal perspective, and again employs an illustration style that reflects the subject matter, even in its use of monochromatic tones, which suggests the past and a dichotomy between lightness and dark.

A very different film which also uses storytelling to interpret the past is Lynn Tomlinson's *The Ballad of Holland Island House*, a clay on glass under camera animation about a house decaying into the Chesapeake Bay, employing a ballad sung from the perspective of the house. This personification of architecture is lovely and sensitive, and uses animation to give voice to something often overlooked, much in the way I hope to make the garden a character in my own work.

Finally, animated documentary can also explore our world through altering documentary images, as seen in Jonathan Hodgson's *Feeling My Way* and Jeff Scher's *White Out*. Both of

these films are inspiring to my work with regard to chosen medium, and both play with drawing on top of footage to enhance or augment it, frame by frame. *Feeling My Way* is an exploration of a walk, with the emotional impact of the things the walker encounters amplified in drawings on top of the footage. *White Out* is a rotoscoped exploration of snow, each frame drawn in different colours and media on different papers, but the continuum of the movement exploration holds it together. Snowflakes, skiiers, shovelling and treetops, this is animated documentary as experimental film: using animation to explore a different view of reality.

The reach and breadth of animated documentary is wide, even without taking into account examples of animation used as supplemental footage within the greater documentary tradition. I am inspired by mixed media techniques, personal stories or stories that personify elements of the world we overlook, and films that use animation to play with time. Like the films that aim to show the un-showable, *What Does a Garden Know?* will use animation to illustrate moments that were never captured on film. Like those illustrating verbatim recordings, the animation in my film aims to accompany my voice, a single narrator rather than dialogue, painting a picture with words that will correspond and respond to the images on screen. Like the animated documentaries focusing on storytelling and interpreting the past, I am also working to tell the story in a structurally creative way, through the perspective of (a small amount of) time. And finally, like those examples of films in which animation is used to enhance, draw over, treat, or augment reality / captured reality through the camera, I will be working to rotoscope sections of my film to add an additional layer of abstraction over documentary footage.

Agricultural Documentary

Given how dependent modern society is on the production of food outside of cities, it is no surprise that agriculture has been a popular subject for documentary filmmaking. These films have different goals: to educate, to inform a disconnected population about the origin of their foods, to tell personal stories, explore an individual's character or the nature of a system. Each film employs a varied collection of tactics to achieve its goal, and as in all narrative work, some are more successful than others. What follows is a brief overview of a number of documentary films on the subject of agriculture which I reviewed over the course of this thesis work, and a discussion of how their production choices have influenced my own.

There are different approaches to documentaries about agriculture, but to generalize, I believe I can divide the films I consumed into two main categories: films about the system and films about a single farm or farmer.

While my film is more of a personal story than one about the overarching policy that has led to environmental degradation, I wanted to look to two very different films about the system of agriculture for comparison. The first, with its focus on corporations and opinions from experts is *Cowspiracy: The Sustainability Secret*, a feature length film in which the director, Kip Andersen, travels around the United States to interview the heads of major environmental organizations about the leading cause of greenhouse gas emissions. While the companies and NGOs focus on fossil fuels, there is mounting evidence to suggest that animal agriculture is actually the leading cause of environmental degradation worldwide. Andersen makes use of

3D animated infographics and illustrative animations to walk through the statistics of his research, and to bridge gaps in the film between on the road footage and talking heads of interviewees. The film also visits a couple of sustainable farms to compare their emissions with those of the predominant agricultural system. Overall the film is something of a persuasive essay, extremely cerebral in its execution, and does not appeal to the audience emotionally, except with regards to animal welfare, as much as it aims to provide the facts that are often obscured. The film is participatory, in that it acknowledges the filmmaker's participation in the work, but aims to be expository with regard to the sharing of facts about the environment.

By contrast, the second film I am examining in looking at documentaries about the food system is Agnes Varda's 2000 film, *The Gleaners and I*, which focuses much more on culture than policy. Varda makes use of a handheld camera and goes into the field to experience the various ways in which a culture of "gleaning" has existed throughout history, evolving from picking the fields to dumpster diving, and looking at the impacts of legislation against these actions on individuals. Varda's film puts the focus on the individual and their place in history, rather than the statement of statistics and figures. I appreciate the ways in which her work itself is an act of gleaning, the form reflecting the subject matter, much in the way I aim to make my film by collecting moments in a collection of styles. Varda's film is self-reflexive, rather than participatory, the audience is aware of editing choices, and sees the means of production as part of the production itself.

In looking at the second group of agricultural documentaries, those that are about a single farm or farmer, there also appears to be a further sub division: those made by an external filmmaker

or team of filmmakers, and those made by the farmers themselves, as a kind of Autoethnography. I will compare two films made by external teams *Peter & The Farm* by Tony Stone and *Meeting Place Organic Film* by Rebecca Garrett, and finally I will write about *The Biggest Little Farm*, a film made by John Chester about his own experience starting Apricot Lane Farms with his wife, and dog.

Peter & The Farm is a portrait of one man and his farm. Peter Dunn has farmed at Mile Hill Farm in Vermont since 1978. It is a brutal presentation of the trials of running a farm as just one man and machinery with only occasional help, and shows the audience a farm in decline. It feels like a “where are they now” for the optimistic hippie farmer of the ‘70s, and Dunn self describes himself as an artist, hippie and farmer who most wanted approval from the farmers. In the ‘60s, he says, the goal was to make money half of the year so one could make art for the other half. But as he puts it, “art is never made when everything is fine.” Dunn has barns filled with animals, and a study full of drawings.

In *Meeting Place Organic Film* the audience meets the McQuails, a family of four (husband and wife and their two grown daughters) who have been farming at the Meeting Place Organic Farm since 1973. Like Dunn, they moved to the farm learning everything from the ground up in the ‘70s, but unlike Mile Hill Farm, Meeting Place is thriving. Home to a sizeable internship program, and a whole community of like-minded agriculturalists, Meeting Place Organic Farm is a beacon for educating and connecting young farmers across Southern Ontario, and the documentary shows not only their philosophy, but the rich community they have built over the

past four decades. Garrett uses slide photographs of the farm over the years to provide historical context for the development of the space.

Both of these films are observational, we are aware that at moments the filmmakers might participate in work on the farm but we rarely see it. In *Peter & The Farm* there is a moment when the nature of the film changes as we see the director confront Peter about his alcoholism, and suddenly the eye behind the camera is a character in the story, with agency, and intent. The observational documentary is useful as a tool in looking at a small farm as it allows the audience to watch life unfold in seasons, and real time, watching the farmer do their work as they speak about their lives. In a sense this is not a luxury we often have when making animated films as observational works tend to be slower, harder to render in real time when one is creating each frame in a timeline. These films feel like portraits of spaces in flux.

Finally we come to a film made by the farmer: *The Biggest Little Farm* was released in 2018 to festival acclaim. The honest and visually stunning journey of the development of Apricot Lane Farm in California begins with the story of adopting a stray dog, and blossoms into a massive and beautiful agricultural project. I felt so many familiar moments over the course of this documentary, moments that echoed my own experience on the farm. Unlike my experience, however, there was clearly substantial startup capital involved in the development of the farm and the film. The project is immense, the farm has a staff in addition to interns, a permaculture expert planning their garden, and a whole host of incredible farm infrastructure. *The Biggest Little Farm* has one more thing in common with my film, and that is that it employs animation to aid in storytelling. Unlike the 3D renderings in *Cowspiracy* the animations employed are

illustrative, whimsical. Comprised of 2D renderings of the central characters, farm animals, life and land, they are well made cycles composited together with rich texture. The animations are charming, they work well to stitch process video together with before and after shots of the farm, and help the narrative in moments where appropriate footage was not available.

In approaching the production of *What Does a Garden Know?* I have learned that moments of observation can lead to a feeling of intimacy between the audience and subject in the theatre, that using diagrams and infographics can be effective for communicating models and techniques for farming, and that animation is often used to stitch up the spaces where there is no footage. I will aim to collect my scenes, as Varda did in *The Gleaners and I* into a personal but political film about the importance of this work, in spite of its challenges.

Chapter IX. Technical execution

The approach I have taken with the creation of my animated film is multi-faceted, and the documentary short is divided into four chapters, which echo the first four chapters of this written thesis. I wanted to explore the subject matter in different forms of animation, and have the arc of the final film move from abstraction into reality to reflect my own personal journey of discovery.

At the outset of this project I had a lot of optimistic ideals about what it meant to move out to the country and to turn a space into a thriving eco system. Some were based in research, and others were caught up in a certain zeitgeist, that desire to return to a “simpler time.” I wanted to use the illustrative potential of animation to move in style from the simplicity of the cartoon line to reality. I thus structured my film to begin with illustrated cut outs, move into 2D animation, then rotoscoping, a sort of transition between the drawn line and actual footage, and finally to end with a kind of live action reveal that would show the audience the space that has been referenced throughout the film. The writing style functions in the opposite direction, beginning with exposition, statement of fact and evolving into the more poetic as the story progresses. There is a relational exchange between the script and the images.

Chapter I. How we got here: Under Camera Animation

In the first chapter the audience is introduced to the two central characters in the film, animation students living in Montréal and longing to feel more connected to the earth and our food system.

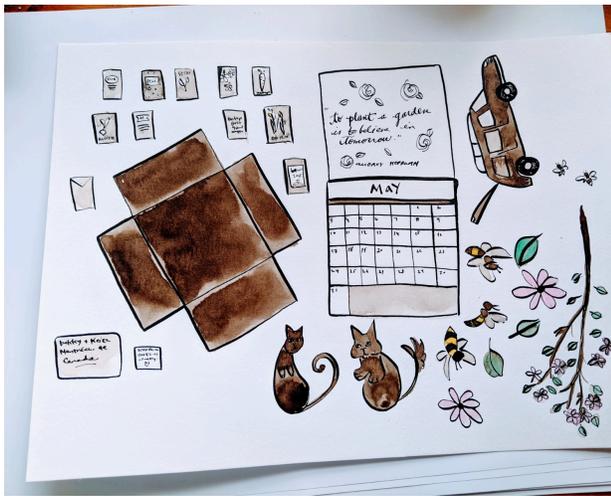


Figure 17. Paper Props to be Cut Out



Figure 18. Paper Puppets to be Cut Out

In Chapter I. *How we got here* I make use of paper cut outs shot on a tabletop to create a stop motion style that marries a comic book aesthetic with real elements, like seeds and flower petals. This collage approach is a direct reference to the foraging I mentioned in the chapter on Le Guin's *Carrier Bag Theory of Fiction* and is literally comprised of elements that I gathered or ferreted away over the years.

The puppets are made up of articulated segments of watercolour paper, outlined with a dip pen in India Ink and shaded with a mix of home made black walnut ink and watercolours. This is the only section of the film where I permitted myself to make use of synthetic colours, representative of the synthetic elements of city life.

Chapter II. How we grew: 2D Animation

The second chapter of the film is about learning the reality of living and working on a farm. The themes of the scene include research and exploration.

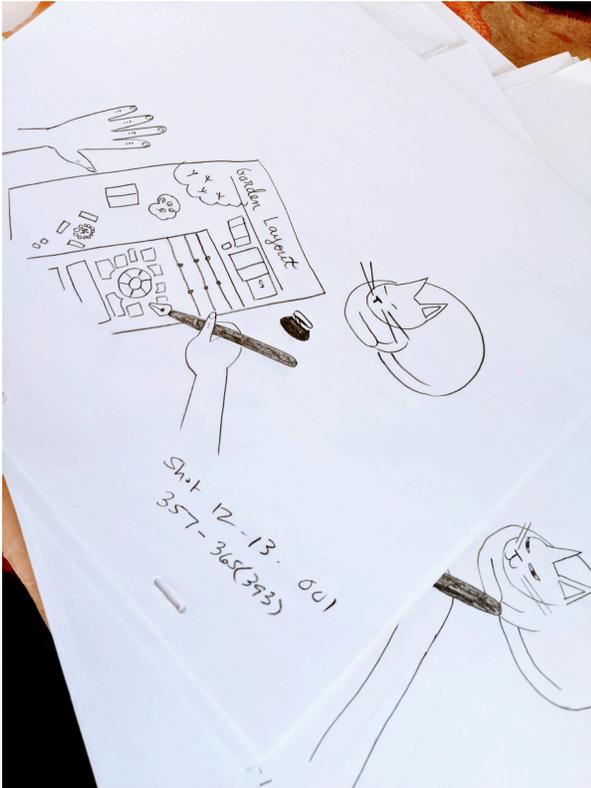


Figure 19. 2D Animation Frames



Figure 20. Rough 2D Layout in Field Guide

I chose the technique of classical 2D animation on paper because I wanted to represent the drafting and research process in the aesthetic of this portion of the film. The drawings reference scientific illustration, infographic diagrams and text books, while showing the characters again, this time as cartoon drawings, with more evolved movement and characterization than in the first chapter. The chapter is animated in pencil on paper, photographed under the camera, and colour corrected digitally.

Chapter III. Mistakes and Triumphs (Lessons): Rotoscoping with Natural Inks

The third chapter of my film is about falling into the rhythm of life on the farm. There are highs and lows, moments of extraordinary growth, life and death.

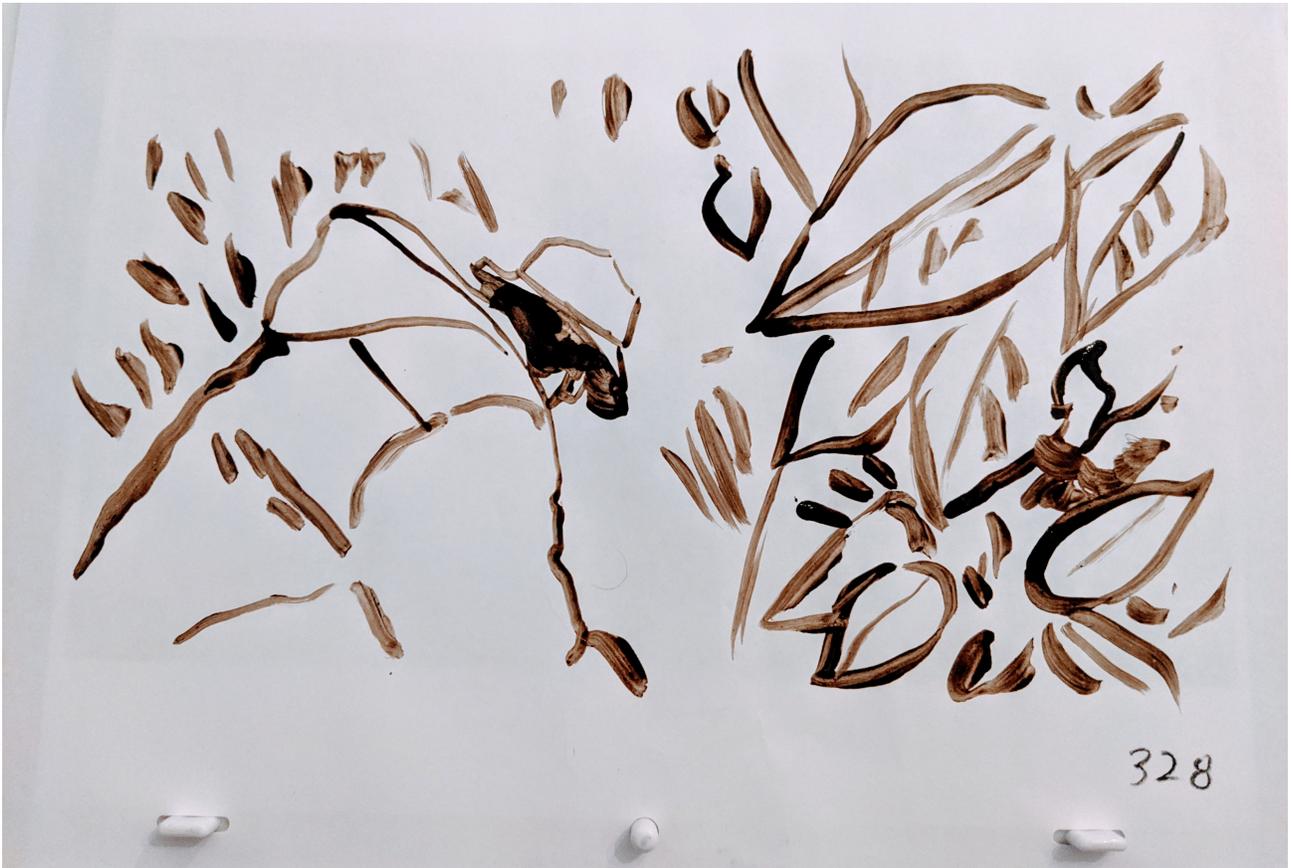


Figure 21. Rotoscoped Frame in Black Walnut Ink

In this chapter the film moves out of the realm of the theoretical and into experiences, and so the goal was to animate it in a style that would reflect both the wonder of what was being learned and felt, and the magic of those moments. The final approach was to edit together footage shot over the course of the development of the farm, and to transform the images through the translation process of animation.

The video, shot on an iPhone and later a Google Pixel Phone (with some supplementary material shot on DSLR) was edited together in Adobe Premiere, and transitions between shots were drawn in TVPaint. Each frame was then printed out in black and white and traced / painted on an LED light box with plant based inks made from materials harvested from the garden or collected on the farm.

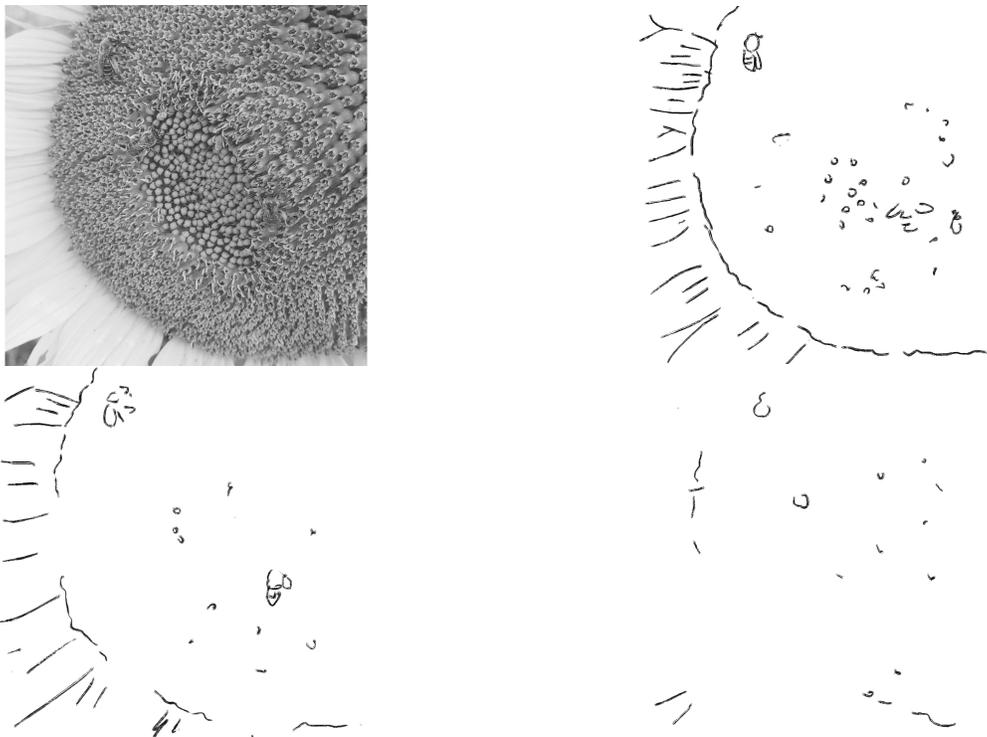


Figure 22. Digitally drawn animated dissolve transition.

The goal in using plant-based inks was to attempt to connect the subject matter into the materiality of the artwork. In approaching this poetic and non linear documentary form the rotoscoping serves as a transitional abstraction between illustrative animation and live-action video footage.

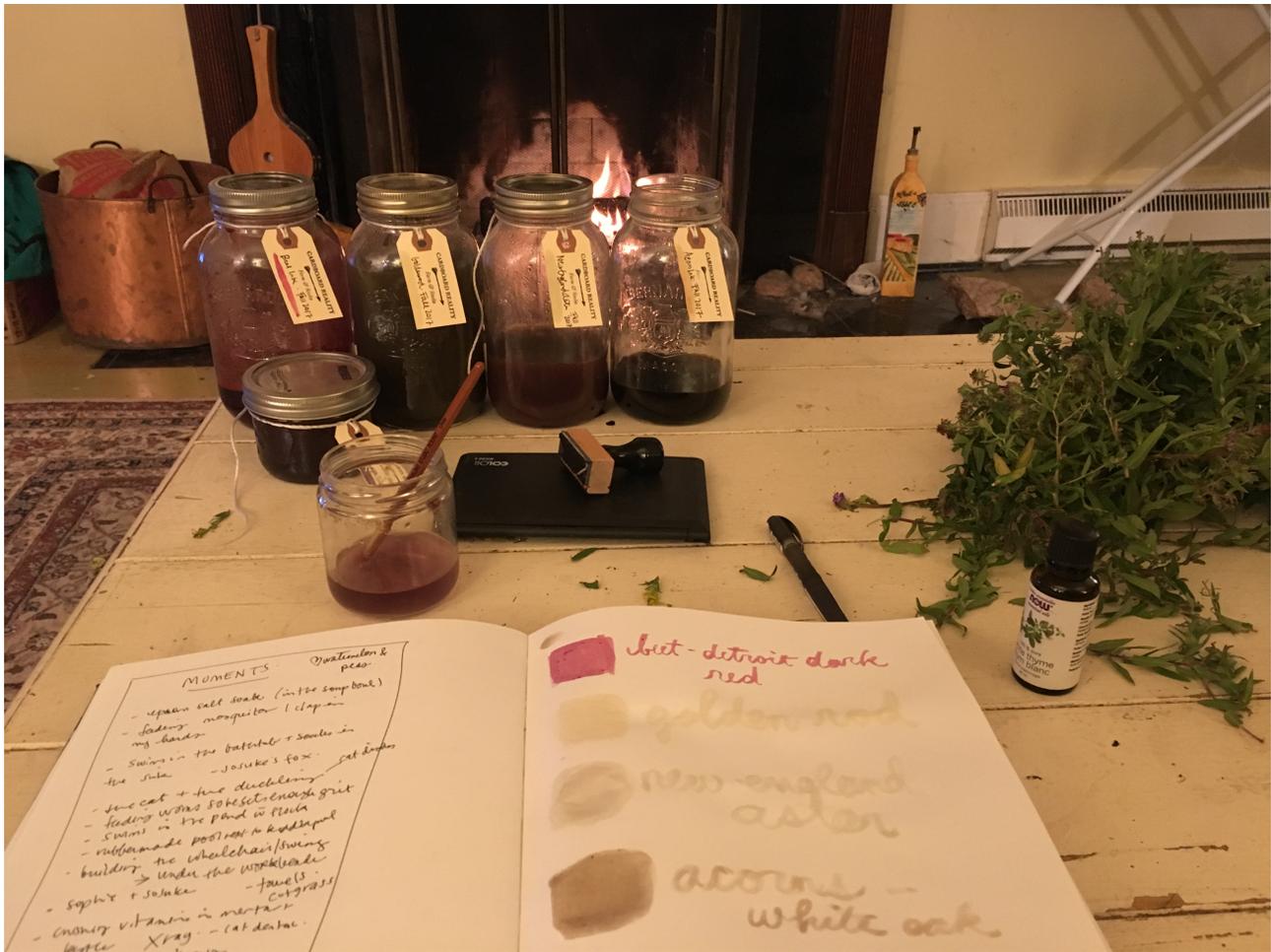


Figure 23. Natural Ink Experiments

The goal was to explore the ways in which hand-made supplies from home grown and foraged materials tell stories that reflect the landscape or people's understanding of the environment in which they were cultivated. Throughout my graduate studies there were many experiments with the creation of home made and improvised art supplies (from inks to garlic stalk paintbrushes and duck feather quills) to reflect upon whether the use of mixed materials that reflect the subject matter can enhance the overall message of the work.

Chapter IV. Symphony of the Harvest / What does a garden know? Live Action Video Footage

Chapter four of the film is a culmination of all of the work. The stresses of the previous chapter are still present, but we have settled into the rhythms on the farm. The fourth chapter is about becoming one with a place and a practice.



Figure 24. Still from Live Action Video Sequence

The technical approach for the final segment of the film is a short collage of documentary video taken over the course of the four years spent working on it. In a sense it serves as a reveal - finally moving into the real of what the garden, and those who worked on it, look like, and their relationships to the land, plants, and animals. The final segment serves to move out of the realm of the abstract and show the audience what can be accomplished with hard work, perseverance, and a dedication to the land.

About the Studio Practice

This work was completed on the farm in Roseneath, Ontario and at our studio space in Cobourg, Ontario.

In terms of equipment, I animated digitally on a MacBook Pro, making use of either a Wacom Intuos 5 tablet, or an iPad with an Apple Pencil. When shooting stop motion I work with a series of tripods, magic arms and copy stands, and shoot on a Canon 6D DSLR camera, with a mix of new and vintage Nikon lenses with an adaptor. If I am animating on paper I work with a peg bar and LED lightbox, and sometimes on an animation disc.

For software I use TVPaint Animation in combination with Adobe Premiere, After Effects & Photoshop. I shoot stop motion in DragonFrame, and edit sound in ProTools.

A thought on digital filmmaking:

Environmentally I am aware that the nature of my digital workflow requires that I make use of tools such as cameras and computers which I could never create myself, which are manufactured under circumstances that are beyond my control. The nature of this work aiming to be inherently “sustainable” both in subject matter and materials is in a sense underhanded by my reliance on tools. That being said, I do believe that the capacity that digital filmmaking has for reaching a wider audience through online and festival distribution and the access it provides is an important tool for the creation of this work. With my background in the theatre I

can appreciate that there are other forms of creation that could be utilized to spread an equally important message on a smaller scale (and have been particularly inspired by the world of Peter Schumann and the works of Bread & Puppet Theatre), but ultimately believe that moving with the technology forward will eventually grant creators the tools that could potentially be manufactured in a more ethical way.

Epilogue

“We must learn to reawaken and keep ourselves awake, not by mechanical aids, but by an infinite expectation of the dawn, which does not forsake us even in our soundest sleep. I know of no more encouraging fact than the unquestionable ability of man to elevate his life by a conscious endeavour. It is something to be able to paint a particular picture, or to carve a statue, and so to make a few objects beautiful; but it is far more glorious to carve and paint the very atmosphere and medium through which we look, which morally we can do. To affect the quality of the day, that is the highest of arts.”

Henry David Thoreau

Chapter X. Reflections & Future Growth

There are many ways to start a farm, and we did not choose the easiest. The choices we made on the farm have changed the landscape, local flora, and fauna in ways that would seem inconceivable at the start of the project or even from season to season. I have learned, over these four years, that the farm operates on a very different time scale from the day to day I am accustomed to. But it has been a privilege to grow, both literally and metaphorically on this land, and to see what grew with me.

I think often now, of the corners of the farm I seldom make time to visit, of the ways in which a movement away from mechanized agriculture has transformed these 123 acres. I believe Wendell Berry was right when he suggested “If we are to be properly humble in our use of the world, we need places we do not use at all.” (34). We are creating a system that breeds stability through diversity, and part of our system includes all the beautiful wild creatures that find their way to those quiet corners.

Part of the goal of creating this work was to explore the nature of the project, but the second goal was to create a work that could serve as a kind of personal account for how two young people might learn to make a living off a small plot of land. While the resulting work is less an instruction manual than a journal entry, I do hope that the choice to use animation means the work will travel well, as animation often can, and that the characters I drew were endearing enough to an audience to spread the intended message: that we do not have to live in conflict with nature.

While the project is almost complete, in a sense it is only beginning, for the life of a film begins when it is first shown to an audience. I do not think farming is for everyone, but I do think the way forward is for everyone to take ownership of their consumption, and for where we source our fuel. For decades the predominant agricultural industry has been using highly produced marketing techniques to misinform us about the nature of what we eat and where it comes from.

Animated film is an incredible medium for sharing ideas and asking difficult questions. Often film is the language of propaganda or commercial interests, especially given its cost to produce at high quality. I believe it is the duty of the independent media creator to provide alternative narratives.

My intention, by using abstraction to translate images into the poetic realm was to appeal to something innate in all of us. Nursery rhymes and fairy tales often take place on the farm. The

farm is a space we associate with play, with happiness, and with life. I did not grow up on a farm, knowing the dark nights full of stars or the cycles of the growth of things, but I am more at home in the garden than anywhere else. There is something natural about the desire to be connected to the earth beneath our feet.

And just as anyone can make a film, anyone can make a farm. And as far as I'm concerned, we need as many films, and as many farms as we can muster. Factory farming isn't the answer, and so we will continue to sow those seeds, tend the gardens, and dance for rain; and I will continue to use and to encourage others to use media to share this message about the importance of regenerative agriculture. This summer, 2020, will be our sixth year in the garden. Perennials planted over the course of the past five seasons may begin to thrive, the fruit trees will grow, and berry bushes begin to produce. We will plant more of what we are good at, and less of the things that stress us. Every farm is different, after all, and it takes seasons to learn the land, the way it works and what it needs, and what it knows. It's time to get our hands dirty.

Addendum: Current State of the Film *What Does a Garden Know?*

At the time of writing (May 2020) the final edits are still being made to the film, with the goal of finishing it in time for festival submission at the end of June.

The version that is included with my written dissertation is still at an in-production stage, and will be completed with the final changes/developments:

- Chapter II (Pencil drawings) will receive a final colour pass, making use of colour masks that will be rendered in “moving holds” of ink tones from the garden - allowing a continuity between the cut out style from Chapter I and the home made inks from Chapter III. By making several full pages of ink fill with a moving texture, I will be able to use this moving texture to give flat filled colour accents additional texture and cycle movement.
- Chapter III (Ink Rotoscopy) will be completed, the final 200+ frames of landscape, the image of the storefront, and text will be completed in the same style as the preceding frames, and any remaining digital page numbers in the lower right corner of the frame will be photographed and replaced.
- Chapter IV (Live Action) will have some shots replaced or reshot as spring approaches on the farm, to have better flow and more cohesive imagery to match voiceover.

- The current version of the film does not yet have sound design / SFX or ambient music, and the scratch track of the audio voiceover will be edited, and mixed to include additional audio assets.
- Finally, the end credits for the film will undergo a final transition, as I will animate them frame by frame in ink to match the pacing of the movement of the rest of the film.

This export will serve as a record of where the production stood at the time of completion of my thesis defence and studies at OCAD University. Should any reader of this text wish to view a final version of the film, please do not hesitate to contact me.

Works Cited

Aikenhead, Glen S. and Herman Michell. *Bridging cultures : Scientific and Indigenous ways of knowing nature*. Pearson Canada, 2011.

Andrews, Morgan F.P. "When Magic Confronts Authority: The Rise of Protest Puppetry in America." *Realizing the Impossible: Art Against Authority*. Edited by Josh MacPhee and Erik Reuland, AK Press. 2007.

Arsenault, Chris. "Only 60 Years of Farming Left If Soil Degradation Continues." *Scientific American*, 2014. Accessed online February 2020. URL: <https://www.scientificamerican.com/article/only-60-years-offarming-left-if-soil-degradation-continues/>.

Back to Eden. Directed by Dana Erin Richardson and Sarah Zentz, Starring Paul Gautschi, 2011.

Barber, Dan. *The Third Plate: Field Notes on the Future of Food*. Penguin Books, 2014.

Barry, Lynda. *What It Is*. Drawn & Quarterly, 2008.

Bell, John. "The End of Our Domestic Resurrection Circus: Bread and Puppet Theater and Counterculture Performance in the 1990s." *The Drama Review: TDR*, Volume 43, Issue 3, 1999.

Berry, Wendell. *The Unsettling of America: Culture & Agriculture*. Counterpoint, 2015.

Bread and Puppet Theater. *The Why Cheap Art Manifesto*. 1984. Retrieved Online February 2020. URL: <http://breadandpuppet.org/cheap-art/why-cheap-art-manifesto>

Breward, Jeanette. *60 Seasons: A Conversation Around the Future of Food*. 2015. Ryerson University, MFA Dissertation.

Candy, Linda and Ernest Edmonds. "Practice-Based Research in the Creative Arts: Foundations and Futures from the Front Lines." *Leonardo*, Vol 2, No. 1, 2018, pp. 63-69.

Chamovitz, Daniel. *What a Plant Knows: A Field Guide to the Senses*. Scientific American, 2013.

Cowspiracy: the sustainability secret. Directed by Kip Andersen and Keegan Kuhn, Appian Way, 2014.

- de Waal, Frans. *Are we smart enough to know how smart animals are?* Norton, 2016.
- Dickinson, Emily. *Herbarium, circa 1839-1846*. 1 volume, 66 pages. Harvard Library, Retrieved Online February 2020. URL: [https://iif.lib.harvard.edu/manifests/view/drs:4184689\\$1i](https://iif.lib.harvard.edu/manifests/view/drs:4184689$1i)
- Elliott, J. W. *Mother Goose's Nursery Rhymes and Nursery Songs*. Springfield: McLoughlin Bro's, 1873.
- Ellis, Carolyn, Tony E. Adams and Arthur R. Bochner. "Autoethnography: An Overview." *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, Vol 12, No 1, 2011.
- Feeling My Way*. Directed by Jonathan Hodgson, 1997.
- Formenti, Cristina. "The sincerest form of docudrama: re-framing the animated documentary." *Studies in Documentary Film*. Vol. 8, No. 2, 2014, pp.103–115.
- Fortier, Jean Martin. *The Market Gardener: A successful grower's handbook for small scale organic farming*. New Society Publishers, 2014.
- From the Big Bang to Tuesday Morning*. Directed by Claude Cloutier, National Film Board of Canada, 2000.
- Fukuoka, Masanobu. *The one straw revolution: an introduction to natural farming*. Bantam, 1978.
- Ghilarov, Alexej M. "Vernadsky's Biosphere Concept: An Historical Perspective", *The Quarterly Review of Biology*, Vol. 70, No. 2, 1995, pp. 193-203.
- Glynn, Andy. "Drawn from Life: The Animated Documentary." *The Documentary Film Book*, edited by Brian Winston, British Film Institute, Palgrave Macmillan, 2013.
- Good, James Alexander. *William Carlos Williams and the Pastoral Tradition*. 1996. University of Toronto, PhD Dissertation.
- Harland, Maddy. "Permaculture: Tools for Making Women's Lives More Abundant." *Feminist Theology*, Vol. 25, No. 33, 2017, pp. 240–247.
- Haraway, Donna. *Staying with the Trouble: Making Kin in the Chthulucene*. Duke University Press, 2016.

Hodgkins, Martha, editor. *Letters to a Young Farmer: On Food, Farming, and Our Future*. Stone Barns Centre for Food and Agriculture, Princeton Architectural Press, 2017.

I met the Walrus. Directed by Josh Raskin, Produced by Jerry Levitan, 2007.

I Was a Child of Holocaust Survivors. Directed by Ann Marie Fleming. National Film Board of Canada, 2010.

Inhabit: a permaculture perspective. Directed by Costa Boutsikaris, Produced by Emmet Brennan, 2015

Is the Man Who Is Tall Happy?: An Animated Conversation with Noam Chomsky. Directed by Michel Gondry, IFC Films, 2013.

Kalish, Jon. "Making Cutting-Edge Animation On A DIY Homestead. *Weekend Edition Sunday*. NPR. July 16, 2011. Retrieved Online November 2018. URL: <https://www.npr.org/2011/07/17/137680605/making-cutting-edge-animation-on-a-diyhomestead>

Kermoal, Nathalie and Isabel Altamirano-Jiménez, ed. *Living on the Land: Indigenous Women's Understanding of Place*. AU Press: Edmonton. 2016.

Kilkenny, Kate. "The Ending Sylvia Plath Wanted." *The Atlantic*, 2014. Retrieved Online February 2020. URL: <https://www.theatlantic.com/entertainment/archive/2014/10/from-the-archives-the-poems-sylvia-plath-predicted-would-make-her-famous/381946/>

Korn, Larry. *One Straw Revolutionary: The Philosophy and Work of Masanobu Fukuoka*. Chelsea Green Publishing, 2015.

Larmer, Megan. "cultivating the edge: an ethnography of first generation women farmers in the American Midwest." *feminist review* Vol 114, 2016, pp.91–111.

Lear, Linda. *Beatrix Potter: A Life in Nature*. Penguin, 2008.

Le Guin, Ursula K. "The Carrier Bag Theory of Fiction." *Dancing at the Edge of the World: thoughts on women, words, places*. Grove Press, 1989.

Leopold, Aldo. "The Land Ethic." *A Sand County Almanac: and sketches here and there*. Oxford University Press, 1949.

Lovelock, James. "The living Earth." *Nature*; London Vol. 426, Issue 6968, 2003, pp. 769-70.

- MacDonald, Helen. *H is for Hawk*. Vintage Books, 2015.
- MacLeod, Scott. *Understanding Comics: The Invisible Art*. Harper Collins, 2004.
- Martin, Karen & Booran Mirraboopu “Ways of knowing, being and doing: A theoretical framework and methods for indigenous and indigenist re-search.” *Journal of Australian Studies*, Vol 27, No 76, 2003, pp. 203-214.
- Nichols, Bill. *Representing Reality: Issues and Concepts in Documentary*. Indiana University Press, 1991.
- Nichols, Bill. “The Voice of Documentary.” *Film Quarterly*, Vol. 36, No. 3, 1983, pp. 17–30.
- McLaren’s Negatives*. Directed by Marie-Josée Saint-Pierre, National Film Board of Canada, 2006.
- Meeting Place Organic Film*. Directed by Rebecca Garrett, 2016.
- Mr. Frog Went a Courting*. Evelyn Lambart, National Film Board of Canada, 1974.
- Neighbours*. Directed by Norman MacLaren, National Film Board of Canada, 1952.
- Onori, Luciano & Guido Visconti. “The GAIA theory: from Lovelock to Margulis. From a homeostatic to a cognitive autopoietic worldview.” *Rendiconti Lincei*, Vol. 23, 2012, pp. 375–386.
- Pas De Deux*. Directed by Norman MacLaren, National Film Board of Canada, 1968.
- Peter & The Farm*. Directed by Tony Stone, Starring Peter Dunn, Cinema Conservancy and Heathen Films, 2016.
- Roe, Annabelle Honess. *Animated Documentary*. Palgrave Macmillan, 2013.
- Rhodes, Christopher J. “Feeding and healing the world: through regenerative agriculture and permaculture.” *Science Progress*, Vol 94, No. 4, 2012, pp. 345–446.
- Rhodes, Christopher J. “Permaculture: regenerative – not merely sustainable.” *Science Progress*, Vol 88, No. 4, pp. 403 – 412.
- Ruth Stout’s Garden*. Directed by Arthur Mokin, Starring Ruth Stout, 1976.

Ryan. Directed by Chris Landreth, National Film Board of Canada, 2004.

Sager, Mike. "How Do You Produce Some of the World's Most Mind Blowing Digital Animation? Communally, in the deep woods, part-time, after the goat has been milked." *Esquire Magazine*. Volume 152, No. 6, 2009. Retrieved Online November 2018. URL: <https://www.esquire.com/news-politics/a6647/encyclopediapictura-1209/>

Starr, Armoury. "Local Food: A Social Movement?" *Cultural Studies ↔ Critical Methodologies*, Vol. 10, No.6, 2010, pp. 479– 490.

Stein, Karyn, Miranda Miroso and Lynette Carter. "Māori women leading local sustainable food systems." *AlterNative*, Vol. 14, No. 2, 2018, pp. 147– 155

Stout, Ruth and Richard Clemence. *The no-work garden book*. White Lion Publishers, 1976.

The Ballad of Holland Island House. Directed by Lynn Tomlinson, 2015.

The Biggest Little Farm. Directed by John Chester, FarmLore Films, 2018.

The Gleaners and I. Directed by Agnes Varda, Cine-Tamaris, 2000.

The Hat. Directed by Michèle Cournoyer, National Film Board of Canada, 1999.

The Man Who Planted Trees. Directed by Frederik Back, Radio Canada, 1987.

The Sinking of the Lusitania. Directed by Winsor McCay, 1918.

Thoreau, Henry David. "Walden or, Life in the Woods." *Walden, The Maine Woods, Collected Essays and Poems*. Literary Classics of the United States, 2007.

Van Assche, Kristof, Vladislav Valentinov, and Gert Verschraegen. "Ludwig von Bertalanffy and his enduring relevance: Celebrating 50 years General System Theory." *Systems Research and Behavioral Science*, Vol. 36, Issue 3, 2019.

Victory Through Air Power. Directed by James Algar, Clyde Geronimo, Jack Kinney and H. C. Potter, Produced by Walt Disney, 1943.

Walking. Directed by Ryan Larkin, National Film Board of Canada, 1968.

White Out. Directed by Jeff Scher, The Animated Life, Sightlines, The New York Times, 2007.

Wild Life. Directed by Wendy Tilby & Amanda Forbis, National Film Board of Canada, 2011.

Willis, A.J. "The Ecosystem: An Evolving Concept Viewed Historically." *Functional Ecology*, Volume 11, Issue 2, 1997.

Wohlleben, Peter. *The Hidden Life of Trees: What They Feel, How They Communicate - Discoveries from a Secret World*. Greystone Books, 2015.

Wohlleben, Peter. *The Inner Life of Animals: Love, Grief, and Compassion - Surprising Observations of a Hidden World*. Greystone Books, 2017.

Wolfe, Cary. *What is Posthumanism?* University of Minnesota Press, 2010.

Zimmerman, Mary Jane. "Being nature's mind: indigenous ways of knowing and planetary consciousness." *ReVision*, Vol. 26, No. 4, 2004.

Appendix A. The Script

What Does a Garden Know?

bekky O'Neil

Title: **Chapter I: How we got here**

In the autumn we make ink and remember.

Text: (Montreal)

Keith and I were animation students with dreams of escaping the city. In summer little markets opened up next to the metro where farmers would offer passers-by local goods on the way to wherever.

In winter, we'd hole up and watch documentaries about soil degradation, climate change and the loss of pollinators; and wax poetic about all of the flavours our ancestors tasted that we will never be able to savour. Seeds are our shared inheritance, and we went online to order as many magical varieties as we could find.

They came in small envelopes, boxes wrapped in brown paper.

In May of 2015 we packed up our two cats, Dylan & Coraline, and a car full of art supplies and set out for Roseneath.

Title: **Chapter II: How we grew**

The farm sits on 123 hilltop acres in Northumberland County, Ontario. Weekends of my adolescence were spent wandering these fields, cultivated as mono crop by neighbouring farmers in exchange for small maintenance tasks like plowing snow or dropping off fire wood.

One year I came back after a month away to discover that the old man had sprayed all my wild raspberry bushes with RoundUp. They still haven't grown back.

We decide we will use our internet research skills to practice a form of regenerative agriculture called permaculture, which aims use good design to create self sustaining systems that "Feed the soil and let the soil feed the plants."

Text: Feed the soil and let the soil feed the plants. - Sir Albrecht Durer

Late nights are spent on forums or watching tutorials. Our social media feeds slowly become dominated by chickens.

Our first summer a family friend drives his tractor down the edge of the highway and tills a plot adjacent to the lawn.

For the next three years we apply layers and layers of hay, creating a deep mulch garden with coffee grounds, compost and wood ash. Our plot is a massive lasagna, always layering back and forth.

In year five we transition to a deep mulch wood chip garden and collaborate with local arborists on repurposing waste material. As these materials break down they provide nutrients and create soil.

Keith digs with a mattock, and I work with a small spiked tiller that looks more like a workout implement than something used to produce food.

Being connected the farm is beautiful, but sometimes you have to see things you don't want to see.

Title: Chapter III: Mistakes and Triumphs (Lessons)

Five seasons can be measured in bottles of maple syrup or jars of pickles. In the variety of cultivars, the success of the season, and the relationships you built throughout it.

One UFO sighting.

Dozens of ducks in the bathtub.

Moving logs or digging holes alongside the malamutes.

I spend three days a week wrapping vegetables in paper and packaging our imperfect produce as beautifully as I can.

I love digging kale out of the snow long after the frost, or discovering secret feral apple trees and groves of lilacs and puffball mushrooms.

Over the years we will learn that small scale organic farming is as much about education as feeding people.

Why aren't your cabbages bigger or why don't you grow regular tomatoes?
I cannot make plants grow faster, control the season or the rainfall.

When you're a first generation farmer you make a lot of mistakes.

Kiki the duck, after surviving a weasel attack, a broken foot, and falling down a flight of stairs, makes a nest. For 28 days she dutifully sits - keeping the drakes away and turning always turning the eggs. She hatches seven beautiful fluffy ducklings.

I close them in one night with a bucket of water I think is too tall for the ducklings to get to, it's hidden behind the gate so I don't see it. In the morning when I am at the farmers market Keith finds two of the babies floating.

Mistakes.

One year we stock our pond with trout. It's a dry season. Every time we water the garden from our dug well the pond level sinks lower.

Mistakes.

I take up bee keeping. Then my neighbours plant coated corn on a windy day. My bees die.

Mistakes.

The lessons come in pieces, sometimes we move forward and sometimes we retreat.

There are successful moments too - we launch a Community Supported Art & Agriculture Program where subscribers can pick up a weekly share of fresh offerings and art from the farm. We feed twenty seven families.

We're passionate, often overcommitted, tired, so hungry for success that we overestimate how ready we are to do this huge thing that people learn over lifetimes and we're just going to dive in because we have high speed internet on the farm and why not you only have one life to live and damn it's important and a blessing to be on this land.

Unceded land, given to Irish settlers in the 1840s. Hard workers who pulled rocks from the field and made stone fences and houses, but altered the landscape of this indigenous territory in ways that can never be returned.

We're working to restore soil fertility, to use our presence in the community and these media skills to spread a message about taking ownership of our food system.

We believe that good food and good art make the world a better place.

Title: Chapter IV: Symphony of the Harvest / What does a garden know?

We are using permaculture to create a farm that functions like the forest floor.

The ducks know where the best bugs are, *where my delicious beans are that they are not supposed to eat.* The ducks are farmers. The ducks will wait until the crop is ripest and then pillage it.

The cats know where the rats live, how to grab moths out of the air with a single nail.

The fruit trees know when to flower and when to produce. The horseradish and rhubarb at their bases feed them, and form guilds.

The bees know where to find the nectar.

The flowers know to turn their faces to the sun, when to make seed, when to bolt.

The fungal networks and microbes in the soil communicate, tell stories too.

I wonder if perennials have memories of seasons past.

Do they know the frost is coming? Are flowers happy when they bloom?

The dogs protect the ducks from predators, the songbirds seek food and shelter in the winter, the little digging mammals and sweet Rabbits steal crops, but only some. Each year there are more snakes, more frogs, more dragonflies.

It doesn't grow in a day.

Farming is art. Gardening is a mindfulness practice.

We dabble in wildflowers, fruit trees and shiitake mushrooms. We forage, we grow and we feed people and each other.

Text: *The ultimate goal of farming is not the growing of crops but the cultivation and perfection of human beings. - Masanobu Fukuoka*

Title: **What Does a Garden Know?**
a film by beky O'Neil

Credits

Appendix B. The Film - Accompanying Digital Material

What Does a Garden Know?

The animated thesis film that accompanies this text can be found for viewing or download on the OCAD U Library Open Research Repository and at the following link:

Link: <https://vimeo.com/cardboardreality/whatdoesagardenknow>

Password: Seedlings