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Disaster as a Framework for Social Change: Searching for new patterns across plant ecology and online networks

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Graduate Program in Art and Visual Culture
A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy
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**Disaster as a Framework for Social Change:
Searching for new patterns across plant ecology and online networks**

Abstract

This dissertation looks to disaster as a framework for enhancing community and the ways in which small gestures of artistic practice might be utilized for change. Embracing the complexity of disaster, the dissertation weaves linkages across a number of disciplines: disaster studies, climate science, contemporary art, internet studies, and plant ecology, in order to seek out potential tactics. Utilizing artistic strategies, especially an embrace of failure as part of methodology, this dissertation accepts the contradictions of such complexity, asserting that following patterns of overlap is a necessary tactic for approaching emergent and speculative futures. The overall project takes cues from Adrienne Maree Brown, who, in her 2017 book *Emergent Strategy*, advocates for looking to the multiplicity of the simple interactions that develop complex systems. Prioritizing the imagining of new futures, this research weaves together a number of models as a tactic for considering new methods of approach. Paired with this written document is a body of artistic work spanning gallery exhibitions, organized events and curatorial projects, developed as a way to put theory into practice and to consider how small gestures of practice could have the power to disrupt. The dissertation unfolds by first looking to the history of disaster scholarship, followed by examples of strategies communities have used to tackle disaster when it hits. The text then moves into how technology—specifically social media—impacts our current cultural ethos, influencing how disaster is considered and approached, and concludes with strategies that plant communities use to evade and cope with disaster as potential examples to pull from. Artistic works generated while undertaking this research are interspersed across the main part of the written document as interstices, and a dossier complete with documentation, follows as an appendix.

Keywords

Disaster, community, contemporary art, visual art, media art, social practice, socially engaged art, plant ecology, human and non-human relations, activism, capitalism, social media, Internet, new media, technology, emergent strategies, speculative futures, failure.

Summary for Lay Audience

This dissertation looks to disaster as a framework for enhancing community and the ways in which small gestures of artistic practice might be utilized for change. Prioritizing the imagining of new futures, this research weaves together a number of models as a tactic for considering new methods of approach. Paired with this written document is a body of artistic work spanning gallery exhibitions, organized events and curatorial projects, developed as a way to put theory into practice and to consider how small gestures of practice could have the power to disrupt. Artistic works generated while undertaking this research are interspersed across the main part of the written document as interstices, and a dossier complete with documentation, follows as an appendix.

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**Disaster as a Framework for Social Change:
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Preface

In 2008, a week after Barack Obama was elected president of the United States, art collective the YES MEN (along with hundreds of independent writers, artists, and activists) released a “special edition” of the New York Times to morning commuters across the US. Dated July 4th of the following year, the headlines and stories presented that which seemed impossible: “IRAQ WAR ENDS” highlighted the first page (above the fold), “United Nations Unanimously Passes Weapons Ban,” “Prison Industry Looks Within.” A full page advertisement from Exxon Mobil pledging their commitment to “meeting the new Congressional guidelines for socially, economically, & environmentally responsible energy” sat on page A3.

The paper presented all of the ways the US could be different—it offered the chance for people to see and experience *potential*. Stephen Lambert, an artist and activist who contributed to the project explained at the time: “We wanted to experience what it would look like, and feel like, to read headlines we really want to read. It’s about what’s possible, if we think big and act collectively.”¹ It provided an opportunity for citizens to experience how it could feel if only the country (in fact the world) were different—if “Nationalized Oil [was] To Fund Climate Change Efforts.” It bypassed the need to explain, rationalize or theorize how these shifts might come about—it ignored the inherent contradictions of how our society is built versus how we imagine it, and jumped right into the future—right to what is possible. It is within this perspective that I come to this dissertation and larger research project. I’d like you to imagine how the future could be—to look past how things are and skip ahead to what is possible, to embrace contradiction, to follow tangents and to see where the resulting patterns might lead us.

¹“New York Times Special Edition,” The YES MEN (website), Nov 6, 2008, <https://theyesmen.org/nyt>.

First, consider the way that you know the world to be.

Then imagine that it could so easily be different.

Repeat until the way things are no longer seems logical.

Proceed to read.

Chapter One

Introduction – Grasping at Roots



Figure 1. Screenshot of tweet from Eve L. Ewing (@eveewing), Twitter, 15:27, 1 April 2018

We are already living within disaster. Considering the years of oppression, colonialism and racism imposed upon Black, Indigenous, and people of colour, it might be more accurate to state that we have been in a continuous state of disaster.² As the crises continually mount, my research is dedicated to helping illuminate clearer paths through it, to investigate disaster as both subject and framework, and the ways in which small gestures of practice might be utilized as tools for change. Through the generation of artistic works and curatorial projects, my approach relies on the premise that creating opportunities for new conversations around disaster has the potential to contribute to the reimagining of how dominant systems might radically shift. By ‘radical’ I evoke Angela Davis’s definition of “grasping things at the root.”³ Collectively understood to be ‘processes tied to social vulnerability,’ social scientists have come to understand disaster in terms that move beyond the notion of external agents holding the sole responsibility for events. Disasters are seen not as mere reactions but as actions that result from larger social processes.⁴ It

² I think here of *An Evening of Redness In the West*, an exhibition at the IAIA Museum of Contemporary Native Arts in Santa Fe curated by Candice Hopkins in 2015. Organized around the central premise that apocalypse has already occurred for Indigenous populations who continue to live through it, the exhibition challenged notions often found in popular media of the ‘coming apocalypse.’ “The Apocalypse implies the end of the world, as well as the promise of a new one.” Thus, the exhibition looked toward resistance and strategy offering a sort of guide for survival: “New materials, adaptation and a certain amount of cunning are needed to survive after an Apocalypse. So is resistance.” Within struggle exists a drive that is difficult to articulate, it is bigger and deeper than ‘hope,’ it is a drive that is rooted in resistance, one that stems from necessity. With quotes from: *A Guide To The Exhibition, An Evening Redness in the West*. By Candice Hopkins (Santa Fe: IAIA Museum of Contemporary Native Arts, 2015), exhibition essay for exhibition at the IAIA, Santa Fe, August 21, 2015 through December 31, 2015.

³ Angela Y. Davis, *Women, Culture & Politics*. (New York: Random House, 1989), 14.

⁴ Claude Gilbert, “Studying Disaster,” in *What Is a Disaster? Perspectives on the Question*, ed. E L. Quarantelli (London: Taylor & Francis, 1998. ProQuest Ebook Central), 6.

is through these parameters that I come to approach disaster in my own research, looking to it as *action*, and as a framework operating within larger systems of power.

My research approaches the notion of disaster as concept, expanding beyond the impact of large scale natural disasters, for example, and instead looking to how disasters unfold across multiple scales. Considering disaster through the many linkages interacting during its development and unfolding, my approach is one that weaves threads together from across a number of disciplines. The rise in climate related disasters that we have witnessed since the 1970s, for example, are considered along with their broader economic contexts.⁵ These greater contexts include the impacts industries have on CO₂ levels, which in turn alter the earth's climate by contributing to the atmospheric conditions making storms more intense. The ways in which disasters are handled on the ground and the steps governments then take to 'rebuild' post-disaster are also considered within these economic terms. We've seen numerous examples of disaster-struck communities struggling with additional types of crises once real estate developers see the profit that can be gained as a result of post-disaster damage; resulting in the pushing of primarily lower income and communities of colour out of once vibrant neighbourhoods.⁶ The exploitation of communities—especially of those on the margins—during times of crisis has been normalized, lived by communities on a daily basis, and resulting in shifts to how they move and interact within their own neighbourhoods. This reality is explained further by the Design Studio for Social Intervention: “Since Katrina, as space and affordability have become contested, we have seen new restrictions and militarization of Second Lines through a restricted permitting process,

⁵ Masson-Delmotte, et al., “IPCC, 2018: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.” *In Press*, 2019.

https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_Low_Res.pdf

⁶ One widely reported example is that of the Lower Ninth Ward in New Orleans. When tens of thousands of residents were displaced after the storm, devastated neighbourhoods became cheap real estate to be developed for new residents. From a 2015 Guardian article: “In once-predominantly black and majority poor neighborhoods like the Lower Ninth Ward, white millennials are flocking. [...] When the city started coming back after the storm, people noticed it was coming back differently – whiter, less rooted in its heritage and somehow seemingly even more indifferent to its poorest residents than it had been.” From: Peter Moskowitz, “New Orleans’ Lower Ninth Ward targeted for gentrification: ‘It’s going to feel like it belongs to the rich’,” *The Guardian*, January 23, 2015, <https://www.theguardian.com/us-news/2015/jan/23/new-orleans-lower-ninth-ward-condos-gentrification>

increased police presence and even arrests of jazz musicians. Similarly, many other cities have limited and militarized Caribbean Carnivals, parades, celebrations, public protests, and other opportunities to gather and express in public.”⁷ When not directly experienced, the ways we encounter disaster—especially now through social media—impacts our relationship to the concept, in turn shaping how we anticipate disaster will unfold when it hits. Consider for example, ‘preppers’ stockpiling weapons as they prepare for the next big disaster, and how their anticipation of a certain type of post-disaster society, one that assumes a fear and distrust of others as survival strategy, ultimately shapes that very type of post-disaster response.⁸

Approaching our relationship with disaster is multifaceted and this document is dedicated to teasing apart its complex weaving. My approach is to draw attention to the complexity by looking for patterns that can help find ways through it. The strategies employed by preppers, for example, are fuelled by a number of larger issues: fear of the power of nature and the unknown, fear of the ‘other’ and immigration, strong relationships to property ownership and a distrust of governments. The movement is further exacerbated and fuelled by media on a number of fronts—from Hollywood movies and the collective conditioning as to how we imagine disasters—to social media which also helps to disseminate misunderstanding and fear. The influences of technology on ‘real life’ have had profound impacts on how we consider and experience disaster—at times even creating and shaping disaster itself. Take the example of the stock market crash of 2013, triggered when the Associated Press twitter feed was hacked. In a matter of seconds, \$130 billion in stock value was lost when a fake tweet reporting then

⁷ Kenneth Bailey, Lori Lobenstine and Kiara Nagel, *Spatial Justice: a frame for reclaiming our rights to be, thrive, express and connect* (Design Studio for Social Intervention, 2014), 4.

⁸ Although both have utilized social media as a way to foster community, I purposely make the distinction between ‘survivalists’ and ‘preppers’ here since, within the subculture, clear differences are recognized. While both actively prepare for disaster scenarios that will disrupt their daily lives, preppers are distinct in that their goals aren’t solely to survive but also to be self-reliant. While a survivalist might prepare to be able to survive a major disaster for a number of days or even weeks, a prepper prepares for the event by creating a new ‘normal:’ anticipating that the world will be so fundamentally shifted that they will need to create a new society for themselves from scratch. For preppers, this new society is most often one that follows an ‘every man for himself’ mentality, one that puts property over humanity and individualism over the collective. From: “Survivalists Versus Preppers,” *Prepperz*, <http://prepperz.xyz/survivalists-versus-preppers/>; An essay I wrote for Incite Journal of Experimental Media in 2014: *Hollywood Movies, Media Hype, and the Contemporary Survivalist Movement: An Appropriated Study*, investigated this phenomenon in greater detail situating such preparations by ‘doomsday preppers’ as a new kind of disaster in itself.

President Obama had been injured in an explosion was quickly disseminated.⁹ The disaster was driven by the nature of contemporary trading itself, where firms use high-powered computers to execute thousands or millions of trades per second.¹⁰ But the nature of social media, where information quickly spreads—whether factual or not—played a critical role.

The example of social media can be further analyzed by considering the ways in which it constructs a kind of public unlike that which we have seen before. Fostering dynamic connections across the globe, and offering visibility to many who didn't previously have it, social media has shaped a public where people aren't afraid, in fact are encouraged, to speak freely. One consequence is a public space where hate is both bred and fed; often spreading from the virtual world into real life. That these public spaces are heavily capitalized also plays a critical role in how the technology operates. Teasing out these complex connections, my research attempts to make them visible as a tactic for surviving the realities of the complex and ever-growing disasters we now face.

To undertake this research, I pull from disaster studies, biological sciences, social sciences, visual culture, media studies, computer science, philosophy, contemporary art, and communication studies in order to build a theoretical framework that can be put into practice. Throughout this dissertation, I look specifically to internet studies, plant ecology, and artistic practice in order to seek out potential tactics. My approach is inspired by emergent strategies as contextualized by Adrienne Maree Brown, who describes *emergence* as the way in which complex systems arise out of a multiplicity of simple interactions.¹¹ Developing tools to promote social change from a variety of subjects, disciplines and systems, Brown reminds that: “Transformation doesn't happen in a linear way, at least not one we can always track. It happens

⁹ Christopher Matthews, “How Does One Fake Tweet Cause a Stock Market Crash?” *Time Magazine*, April 24, 2013.

¹⁰ Matthews, “How Does One Fake Tweet.”

¹¹ Adrienne Maree Brown, *Emergent Strategy: Shaping Change, Changing Worlds* (AK Press, 2017), 3.

in cycles, convergences, explosions.”¹² As such, this dissertation weaves together a number of models, strategies, and potentials as a deliberate tactic to consider new methods of approach. The nature of disaster is inherently complex and I approach this research with this in mind.

My overarching project is multilayered and multifaceted. It is both active and responsive to the contemporary moment we find ourselves in, thus, it is ever growing, ever shifting and ever adapting—reflecting the reality of the post-disaster condition. My practice engages with the speculative and is invested in imagining the future as a strategy for tackling and responding to our present moment. Collapsing and twisting the timeline, this strategy is one that bypasses a linear approach; instead pulling from the past and present along with imagined futures as a way to envision and shape potential ways forward. I see this research as preparatory, as an opportunity to think through strategies now before being forced to do so when faced with disaster. This emergent approach allows for considering strategies from multiple angles and for drawing connections between a variety of tactics as a way to not only deal with disaster when it hits, but also to potentially ward off or find strategies for bypassing disaster itself. The complex ways in which disaster overlaps multiple segments within society make it difficult to hone in on appropriate and comprehensive responses, especially when being directly affected by them. I see the act of drawing parallels between strategies as a necessary tactic for survival.

I consider my overall project an attempt to build a scaffolding of sorts. Consider how life is often pieced together in a post-disaster scenario: at first, precariously (relying on whatever is at hand), then undergoing continual adaptation as reinforcing elements are tried and tested, before finally, once surety sets in, reinforced for the longer term. My strategy is to piece things together, to consider, to try, to come at it all from a number of different angles, and to uncover connections that might otherwise remain invisible. This trial and error approach is articulated not only across this paper but in practice as well: through the many artistic works, organized events and exhibitions that have been produced under the umbrella of my creative work. My strategy pulls

¹² Brown, *Emergent Strategy*, 105.

from theories of failure as contextualized within artistic discourse: “Failure, by definition, takes us beyond assumptions and what we think we know and can be represented.”¹³ From the start, I recognize—and in fact, embrace—the fact that attempts to learn from and creatively produce out of disaster are destined to fail. It is too complex for only one approach and necessarily requires a number of tactics. I approach the concept of disaster as failure; as a tool and a structure for thinking differently about society, and as a strategy for approaching new solutions.

The social emergency is already here, it’s just unevenly distributed.¹⁴

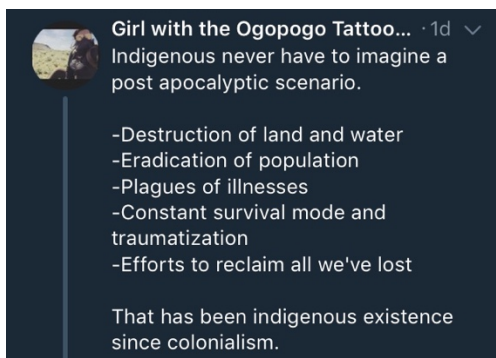


Figure 2. Screenshot of a tweet from Sandra Warriors-Pistolbullet (@BadSalishGirl), Twitter, 10:02am, 3 June 2018

This particular moment in time feels acutely disastrous, but when it comes to society being plagued by war, fear and hate, our era is far from unique. Lauren Berlant, in her shaping of the concept of *cruel optimism*, points toward the realization that our “attachment to compromised conditions of possibility” creates a sense of optimism that can be overtly cruel.¹⁵ In essence, our unrealistic hopes for the future, perhaps tied to our inability to recognize the truth of the world

¹³ Lisa Le Feuvre, “Introduction//Strive to Fail,” In *Failure*, edited by Lisa Le Feuvre, (Whitechapel Gallery, London, The MIT Press, 2010), 12.

¹⁴ “Social Emergency Response Centers and SERC Manual,” Design Studio for Social Intervention, <http://www.ds4si.org/writings/2016/11/17/social-emergency-response-centers>.

¹⁵ Lauren Berlant, *Cruel Optimism* (Duke University Press, 2011), 2.

we find ourselves in, has shaped a scenario where it is difficult to progress. Consider how popular discourse around social media has still yet to fully reconcile the reality of the tools themselves, the impacts of trolls, bots, and uncensored hate for example, from James Bridle: “And while these effects are now well documented, their implications have failed to fully register at the level of society—which seems just as dedicated as Google to feeding humans to mindless algorithmic optimization systems—or even in adult attitudes to other video platforms.”¹⁶

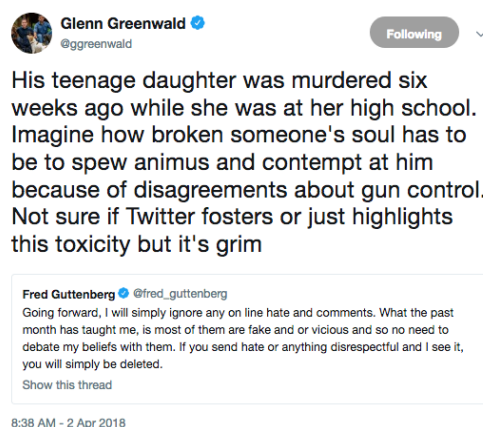


Figure 3. Screenshot of a tweet from Glenn Greenwald (@ggreenwald), Twitter, 8:38am, 2 April 2018.

While the situation may be dire, I also see this moment of recognizing the cruel optimism conceived by Berlant as a critical one of possibility. I assert that by focusing on the events, systems and societal models of our moment, we might begin to see them more clearly; we might find new strategies to engage with and perhaps even the means to reshape them moving forward. By focusing on those disasters occurring now: how they arise, how we handle them and how we prepare for them in the future, I see the potential for reshaping their occurrence as well as our experiences of them. Given this focus, I remain aware of the unreal expectations such a statement implies as the goal of an artistic project and want to clarify my thinking here. I don't

¹⁶ James Bridle, “Phenological Mismatch,” *eFlux Journal* (June 2019) <https://www.e-flux.com/architecture/becoming-digital/273079/phenological-mismatch/>.

expect this project to stop disasters from happening, nor do I expect it to outright shift the parameters of the multifaceted ways in which we experience disasters themselves. My project takes up the notion that small gestures have the power to make slight shifts that might disrupt the ways in which normal advances. I see the potential of these gestures influencing in ways that can begin to grasp at the roots Davis refers to when she defines radical. That is, I see them as necessary contributors to the creation of larger radical shifts. The dilemma here lies in the setting up of expectations: how does one attempt to challenge such massive and complex systems? I don't see the goal of this project as finding a 'cure' for disasters, rather, my approach relies on the premise that contributing to small shifts in the way we collectively consider disaster, itself is a strategy for tackling the larger problems.¹⁷

I find insight for strategy in Eve Tuck's writing on her desire to see methods that work against what she refers to as *damage-centred research*.¹⁸ In an open letter presented at the State University of New York, New Paltz, Tuck defined damage-centred research as that which "operates, even benevolently, from a theory of change that establishes harm or injury in order to achieve reparation."¹⁹ By focusing on damage, research of this nature essentially wallows in the structures of damage-causing systems without offering ways to move out of it. Speaking specifically about Indigenous, urban and disenfranchised communities, Tuck sees this research as inherently damaging as it relates to positive and productive change. Instead, she suggests the need for *desire-based frameworks*. She is interested in those tactics that shift the focus from the damage of Indigenous communities, for example, to the frameworks that position these communities as damaged.²⁰ Tuck's essay advocates for a focus on perseverance in spite of the damage sustained by larger frameworks. Through this perseverance we might come to the futures that we desire for communities and in turn strategies for shifting the systems themselves. This

¹⁷ Throughout this document I utilize the plural pronoun of 'we,' partly as tactic for engaging with readers and implicating you within this overall project, and partly to help situate the project's goals of prioritizing collective models. I approach 'we' as a collective that necessarily is continually shifting—depending on specific circumstances, geographies and timelines—and find its inclusion an important strategy for approaching the concept of disaster.

¹⁸ Eve Tuck, "Suspending Damage: A Letter to Communities," *Harvard Educational Review*, 79 (2009), 413.

¹⁹ *Ibid.*, 413.

²⁰ *Ibid.*, 416.

shift in focus from the effects of the systems causing trauma to the systems themselves calls for a critical re-alignment.

It is within this sort of re-alignment where I see disaster studies and artistic practice coming together: “Without political engagement, art ceases to be contemporary because being contemporary means being involved in the politics of one’s own time.”²¹ I see Boris Groys’ comment as a call, not to wallow in the effects of disaster but instead to pull from the systems of disaster as tactic for creating new, more progressive systems; through disaster we might one day realize revolution. I consider the shift in perspective called for by Tuck as one that could usher in other tactics and a clarity for action.

My research and artistic work is dedicated to finding ways to contribute to the generation of alternative ideas for a more humane and just society, and to find solutions and tactics *now* that can be tested and ready in the moments when we need them most. Incorporating making, curating, writing, sharing and doing, my project casts a wide net. This written document then, should be seen as one small part of a larger whole: in dialogue with the many artistic projects that sit under the umbrella of this ongoing research. As an artist engaging with participatory practice, I see the act of publication as one that expands beyond the written page and this document should be approached keeping this in mind. I pull from Matthew Stadler’s approach to *publication* as a political strategy that constructs a public:

Publication is the creation of a public. It is an essentially political act. This public, which is more than a market, is created by deliberate acts: the circulation of texts, discussions and gatherings in physical space [...] together these construct a space of conversation that is a public space which beckons a public into being. [...] [P]ublication also includes the

²¹ Boris Groys, “Towards a New Universalism,” *e-Flux Journal* #86 (November 2017), <http://www.e-flux.com/journal/86/162402/towards-a-new-universalism/>.

design of public places [...] it also includes the formation of political debates, setting up the circumstance in which we can talk and contend together. [...] Publication requires being a good host, being sensitive to context, to people, being willing to hear and change depending on who is there and what their needs are. [...] Publication requires relationships and conversation. The nature of a public is not one-way; it is not the provision of material to become consumed. The nature of a public is a two-way, three-way, multiple-way conversation that is reciprocal, that requires listening as well as speaking, and requires deliberate strategies in order to maintain or cultivate these conditions. [...] Publication is a lasting and meaningful commitment to one another.²²

Through the creation of space for dialogue, and by bringing people together who otherwise might not, I pull from the framework of the post-disaster neighbourhood and operate from the premise that small gestures have the power to bind together in the construction of something larger. Facilitating opportunities for interdisciplinary conversations and experiences, my research focuses on individuals working in active ways, who don't wallow in the negative face of disasters but who are actively engaging with strategies to defeat them. Looking to the systems that dominate, especially that of the internet, I consider how their structures might be appropriated or utilized differently as a way to further the development of alternative futures.

It is critical to pause here and to clarify my own perspective; which is a Western, specifically North American one. I am the daughter of a white, 3rd generation settler mother whose grandparents emigrated to Canada from the UK in the early 1900s, before (grandfather), and after (grandmother) WWI and a Black American father who has been a Permanent Resident of Canada since the 1960s and whose parents and grandparents lived in the Southern US, with an ancestry disrupted by the American slave trade. I myself have repeatedly moved across North

²² Matthew Stadler, "What is Publication?" *Publication Studio* video, 7:57. May 22, 2010. <https://vimeo.com/14888791>

America and between both Canada and the United States.²³ The strategies and insights explored throughout this document should be seen as coming from within this particular lens. Along with this individual perspective, thinking across this dissertation pulls heavily from ecology, more specifically, plant ecology.²⁴ Relating to the overall complexity that disaster studies engages with, ecology is thus defined: “The English word *ecology* is taken from the Greek *oikos*, meaning ‘house,’ our immediate environment. In 1870 the German zoologist Ernst Haeckel gave the word a broader meaning: the study of the natural environment and of the relations of organisms to one another and to their surroundings. Thus, ecology is the science by which we study how organisms (animals, plants, and microbes) interact in and with the natural world.”²⁵ I look specifically to ecological relationships among plants—especially how plants evade, respond to and prepare for disaster—as a way to find strategies for our own communities. It is important to note that my working definition of *community* is one that also draws from ecology: “many populations of different kinds living in the same place constitute a community,”²⁶ and necessarily includes both human and non-human entities. Also important to recognize is that the English language often pulls from ecology when it comes to thinking about both community and technology—two primary focuses of this dissertation. With terms like *ecosystem*, *rhizomes*, and *roots* common to all three, the vocabulary is taken up quite differently in ecology, whose definitions I lean on as part of my primary framework. As an example, the term ‘ecosystem’ is often used by the humanities to describe or explain communities, while in ecological terms the two represent quite different processes:

²³ Definitions of generation status as set by Statistics Canada: “Generation status: Canadian-born children of immigrants,” Statistics Canada, modified July 25, 2018, https://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-010-x/99-010-x2011003_2-eng.cfm; This extended introduction to help explain where it is that I, and thus my perspective, comes from was inspired by comments made by Mohawk/Tuscarora writer Janet Rogers at a recent talk in Edmonton. She discussed the importance of knowing and stating one’s own ancestry as a way to begin the Reconciliation process with Indigenous peoples. While in dialogue with Amy Fung at Latitude 53, Thursday, May 23, 2019.

²⁴ Focus on this discipline is not new to me. Prior to engaging with artistic practice, my university studies were within ecology, which helped to shape my overall worldview (I earned a Bachelor degree of Science with specialization in Environmental Biology in 1996).

²⁵ Robert E Ricklefs, *The Economy of Nature*, Third Edition (New York: W.H. Freeman, 1993), 1 (italics mine).

²⁶ *Ibid.*, 3.

We may speak of the forest ecosystem or the community of animals and plants that inhabit the forest. But the two terms apply to different types of processes. The study of ecosystems addresses the movement of energy and materials within the environment, as they are affected by the activities of organisms and by physical and chemical transformations in the soil, atmosphere, and water. The study of populations and communities is more concerned with the development of ecological structures and with the regulation of ecological processes by means of population growth and the interaction of populations with the environment and each other.²⁷

Since I am pulling from definitions that are often (mis)utilized across disciplines, and keeping in line with common practices seen in ecology—where clear definitions are necessarily stated—I have included a glossary of terms to help situate my meaning: “Glossaries can help readers to pause and make sense of something cramped and tightly worded; readers move from the main text to the back, and forth again.”²⁸

Thinking about the complexity of disaster is not possible without thinking deeply about the climate crisis, one of the most pressing disasters of our moment that also intersects with a number of crises related to environmental and social justice and the impacts of late-capitalism. Zoe Todd, in her 2015 essay “Indigenizing the Anthropocene,” reminds that “Not all humans are equally implicated in the forces that created the disasters driving contemporary human-environmental crises,” and that our approach to solving the crisis needs to continually “query which humans or human systems are driving the environmental change the Anthropocene is meant to describe.”²⁹ A number of scholars point out that this approach needs to begin with the term *Anthropocene* itself, from *anthropo*, or “human,” and *cene*, or “new”— meant to describe

²⁷ Ibid., 4.

²⁸ Eve Tuck and C. Ree, “A Glossary of Haunting,” in *Handbook of Autoethnography*, ed. Stacey Holman Jones, Tony E. Adams, and Carolyn Ellis (Left Coast Press, Inc, 2013), 640.

²⁹ Zoe Todd, “Indigenizing the Anthropocene,” in *Art in the Anthropocene Encounters Among Aesthetics, Politics, Environments and Epistemologies*, ed. Heather Davis and Etienne Turpin (London: Open Humanities Press, 2015), 244.

the geologic time frame we currently live in while pointing directly to the impacts that humans have had on altering the earth. Heather Davis further explains: “The Anthropocene, by relying upon the oft-cited and problematic use of the anthropos, seems to fulfill this narrative teleology by advancing a notion of the human as the masculinist technological agent doomed to bring about humanity’s own end. What is troubling in this scenario is both the logic of finitude that it proposes—that there will be a clear, clean and defined end, rather than the much more probable scenario of ongoing devastation, species extinction, and mutation.”³⁰

Another significant problem with the term Anthropocene stems from disagreement as to when the geologic period should be noted as beginning: “The scientific community offer us three possible material beginnings for the Anthropocene subject: the Columbian ‘exchange’ and ‘Orbis hypothesis’ event (1610); the Industrial Revolution and James Watt’s steam engine (1800); and the ‘Great Acceleration’ and nuclear isotopes from missile testing.”³¹ Kathryn Yusoff eloquently teases apart the problematics associated with the various suggested beginnings, reminding us that every origin of the Anthropocene is “intensely political in how they draw the world of the present into being and give shape and race to its world-making subjects.”³² Aside from the Columbian exchange and Orbis hypothesis, which locate the start of the Anthropocene with the invasion of the Americas and the resulting mass genocide of Indigenous populations, Yusoff argues that all three hypotheses still neglect to reconcile the human bodies that have been

³⁰ Heather Davis, “Life & Death in the Anthropocene: A Short History of Plastic,” in *Art in the Anthropocene Encounters Among Aesthetics, Politics, Environments and Epistemologies*, ed Heather Davis and Etienne Turpin (London: Open Humanities Press, 2015), 353.

³¹ Kathryn Yusoff, *A Billion Black Anthropocenes or None (Forerunners: Ideas First)* (University of Minnesota Press, 2018, Kindle edition), Chapter 2; The ‘Anthropocene’ Working Group (AWG)—part of The Subcommittee on Quaternary Stratigraphy (SQS), a constituent body of the International Commission on Stratigraphy (ICS), and the largest scientific organization within the International Union of Geological Sciences (IUGS)—convened during this writing, in May 2019, and voted to recognize the start of the Anthropocene in the geologic record as being that of the Great Acceleration. The question posed to the 34 members: “Should the primary guide for the base of the Anthropocene be one of the stratigraphic signals around the mid-twentieth century of the Common Era?” resulted in the following: 29 voted in favour (88% of votes cast); 4 voted against; no abstentions. From the AWG’s current working definition of Anthropocene: “Its beginning would be optimally placed in the mid-20th century, coinciding with the array of geological proxy signals preserved within recently accumulated strata and resulting from the ‘Great Acceleration’ of population growth, industrialization and globalization.” From: “Working Group on the ‘Anthropocene’ - Results of binding vote by AWG,” Subcommittee on Quaternary Stratigraphy, 21st May 2019, <http://quaternary.stratigraphy.org/working-groups/anthropocene/>.

³² Yusoff, Chapter 2.

implicated in the process: “Tying the Anthropocene to conquest makes explicit the colonial relation, but how does this rupture of bodies, flesh, and worlds become buried in the notion of exchange and contact?”³³ The proposed starting points fail to include the “histories of racism that were incubated through the regulatory structure of geologic relations.”³⁴

The histories of the Anthropocene unfold a brutal experience for much of the world’s racialized poor and without due attention to the historicity of those events (and their eventfulness); the Anthropocene simply consolidates power via this innocence in the present to effect decisions that are made about the future and its modes of survival.³⁵

There have been multiple alternatives suggested for the term Anthropocene to better describe our time, and at this writing, I’m not comfortable accepting any of them completely. I reject the notion of needing to settle on any one term as a tactic for looking forward to the future and for living in and responding to the ever changing and unpredictable present that the climate crisis—and the systems that have created it—has shaped. As such, you won’t see the term utilized much across this written document. The term, for me, doesn’t fully incorporate or reflect on the concerns that both Todd and Yusoff make explicit. The concerns that both make space for are ongoing and replicated in the very society and systems that we have created, and continually feed into and shape my perspectives. To lean on Christina Sharpe: “They texture my reading practices, my ways of being in and of the world, my relations with and to others.”³⁶

Perhaps it is appropriate that a term meant to describe the moment we exist within, one so thoroughly turbulent and whose next steps are so unknown, is proving difficult to name in a way

³³ Ibid.

³⁴ Ibid, Chapter 1.

³⁵ Ibid.

³⁶ Christina Sharpe, *In the Wake: On Blackness and Being* (Durham and London: Duke University Press, 2016. Kindle edition), 5.

that brings consensus. We are so entangled within it we can't see it for what it is: "We're all looking at the same world and seeing radically different things [...] And we have built ourselves a system that reinforces that effect, an automated populism that gives people what they want, all of the time."³⁷ Here, Bridle is referring to the technology that we have built and are only now beginning to consider the repercussions of. That social media has created a situation where people can express their beliefs over facts is by design. This bias, wrought with conspiracy and disbelief of truth and the real, is directly tied to both the shaping and understanding of the world we live in and the ways in which we might begin to tackle the repercussions we face because of climate change.

This dissertation attempts to cut into this complexity, to look closely at the multiplicity of threads tightly woven up within the concept of disaster and to begin to tease them apart. My research maintains that starting to pull at even the smallest of these threads might help to shed light on the larger issues. In seeking out alternatives, I am necessarily open to embracing contradiction—I operate under the premise that a multitude of solutions need to be continually tried and tested in order to get at new strategies. My approach is one that centres artistic perspective and practice and prioritizes emergence. Artists look to the future, we imagine other potentials and possibilities. At times across this written document, questions are posed to help start the imaging of these potentials and possibilities, but it is important to note that such imaginings follow outside of the scope of this essay. Coming back to Stadler's active definition of *publication*, questions posed within this document will be engaged with through artistic practice—taking the form of participatory projects, artistic works and curated exhibitions. That is to say, I don't see this document as the space for active imagination, instead what follows is a body of research that will continue to be explored within the realm of artistic practice. It is from within this approach that this dissertation follows.

³⁷ James Bridle, *Notes from New Dark Age: Technology and the End of the Future* (London: Verso Books, 2018), Chapter 8.

And now I have become obsessed with how we can be movements like flocks of birds, underground power like whispering mushrooms, the seashell representation of a galactic vision for justice – small patterns that avoid useless predation, spread lessons, and proliferate change.³⁸

Dissertation overview

Following this introduction, in Chapter Two, I look to the history of disaster scholarship and outline some of the complexity existing within disaster itself. Chapter Three looks to ways that communities tackle disaster when it hits as well as to strategies that artists have utilized when approaching crisis and disaster. Considerations as to how technology impacts our current moment, and how we might come to think about our current model as fuelling disaster is unpacked across Chapter Four. Split into two parts, the chapter first focuses on the role that technology plays overall, and then hones in to look specifically at the internet and social media. Chapter Five begins to develop a framework of disaster by looking closer at strategies plants use to tackle and evade disaster in ecological systems and attempts to find models to pull from for our own communities. A body of my artistic work actively runs parallel to this written document. Consisting of projects spanning video installations, curated events and exhibitions, as well as experiments in strategies for working with others, this work is meant to actively put theory into practice and to find strategies for imaging the future. A number of these works are referenced as interstices between sections of this dissertation; a dossier providing documentation of all artistic projects engaged with as part of this research is included as an appendix. While the artistic works—especially those that engage with participatory practice—do not translate entirely via these written descriptions, they are offered by way of example. These works are meant to be engaged with in person. So, in order to truly know them, one needs to participate.

³⁸ Brown, *Emergent Strategies*, 23.

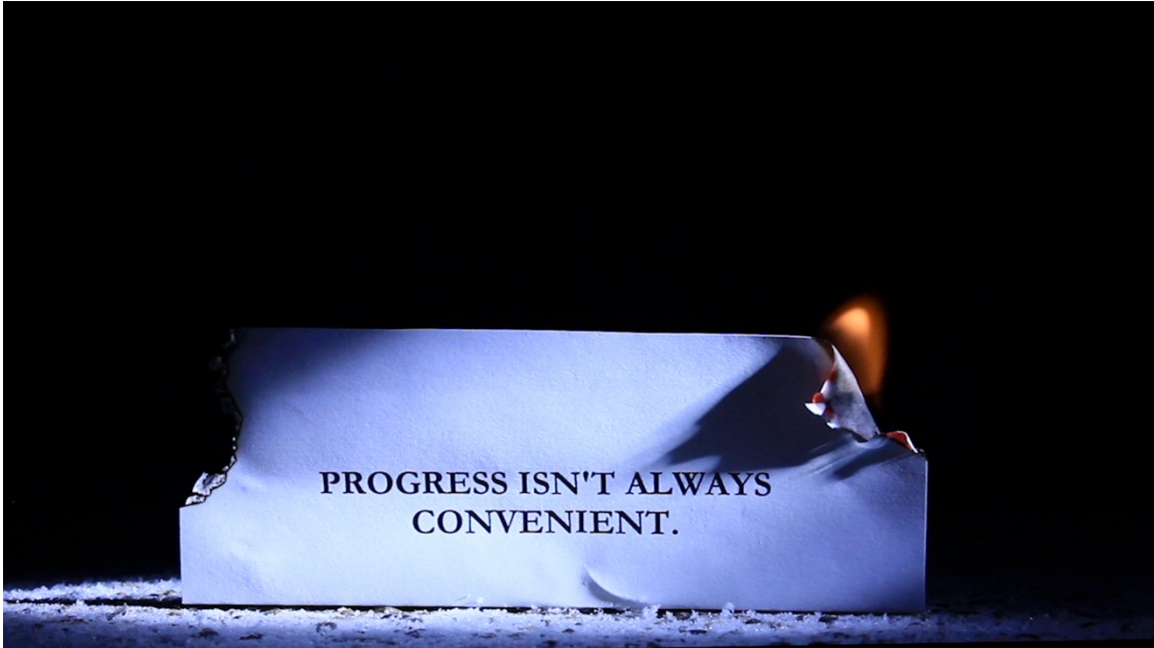


Figure 4. Video still from 'Notes to self,' C. Battle, 2014, ongoing.

Chapter Two

The History of Disaster Scholarship and the Complexity of Disaster

The definition and conceptualization of disaster has shifted over time. In the 1990s the highly recognized disaster researcher, Enrico L. Quarantelli, proposed that we look beyond disaster events themselves and instead to their characteristics, conditions and consequences.³⁹

Quarantelli's shift in perspective had a profound impact on the overall discourse related to disastrous events, now understood to be a complex series of related processes extending beyond the incidents themselves. Writing in the oft-cited *What is Disaster? New Answers to Old Questions*, Uriel Rosenthal elaborates on Quarantelli's multifaceted approach explaining how natural disasters are understood today as related more directly to human intervention and exploitation.⁴⁰ Thus, when considering a natural disaster, for example a tornado or a flood, one must also consider the surrounding processes and events that intersect with the disaster itself; the "social, environmental, cultural, political, economic, physical, [and] technological, transpiring over varying lengths of time," which, as Anthony Oliver Smith points out, are implicated not only with how the disaster is caused but also with how it manifests, is responded to and overcome.⁴¹ Since the definition of a disaster is multidimensional, the approach to understanding and confronting it must be also.

As the definition of disaster began to broaden, social factors came to be understood as relevant contributors and social context as directly related to disaster events.⁴² This new understanding also shifted how we consider disaster itself, transforming it from an *effect* to "a *result of*

³⁹ Anthony Oliver Smith, "Global Changes and the Definition of Disaster," in *What Is a Disaster? Perspectives on the Question*, ed. E L. Quarantelli (London: Taylor & Francis, 1998. ProQuest Ebook Central), 147.

⁴⁰ Uriel Rosenthal, "Future Disasters, Future Definitions," in *What Is a Disaster? Perspectives on the Question*, ed. E L. Quarantelli (London: Taylor & Francis, 1998. ProQuest Ebook Central), 151.

⁴¹ Smith, "Global Changes and the Definition of Disaster," 179.

⁴² Gilbert, "Studying Disaster," 4.

underlying logic of the community.”⁴³ In turn, the shift from external to internal precipitants led to disaster being seen first as a crisis of communication within a community.⁴⁴ Writing later in 2005, Quarantelli noted that this understanding of disaster needs to remain adaptable to expansion as we continue to see new forms of “social happenings that will need to be either included or excluded from the rubric of ‘disaster.’”⁴⁵ How communities form and communicate shifts over time, and the relatively recent development of social media provides an excellent example that now should be considered within disaster’s evolving definition.

Paul Virilio focuses on the substance of accidents, furthering the concept of disaster as a process that unfolds over time and in response to a series of factors. Looking back to Aristotle and the notion that the accident reveals the substance, Virilio concludes that the invention of the substance is in itself the invention of the accident.⁴⁶ It follows then, that: “to invent the sailing ship or steamer is to *invent the shipwreck*. To invent the train is to *invent the rail accident of derailment*. To invent the family automobile is to produce the *pile-up* on the highway.”⁴⁷ Virilio’s focus on 20th century inventions as substances holding within them the potential for accident echoes Quarantelli’s inclusion of the element of time within the construct of disaster discourse. For Virilio, the effects of accidents are not only felt in the moment but are linked together through time, having the potential to cause impacts across multiple generations.⁴⁸ Virilio considers this phenomenon a cultural one, a by-product of our privileging of the present to the detriment of the future: “Since, at every moment, everything happens, most often unexpectedly, a civilization that implements immediacy, ubiquity and instantaneity, stages accidents and disasters.”⁴⁹ Using the 1986 nuclear disaster in Chernobyl as an example, Virilio points toward the moment of the accident as a turning point. Prior to the explosion on April 26,

⁴³ Ibid, 6 (italics mine).

⁴⁴ Ibid, 7-8.

⁴⁵ E L Quarantelli, “Introduction, The basic question, its importance, and how it is addressed in this volume,” in *What Is a Disaster? Perspectives on the Question*, ed. E L. Quarantelli (London: Taylor & Francis, 1998. ProQuest Ebook Central), xiv.

⁴⁶ Paul Virilio, *The Original Accident*, trans. Julie Rose (Polity Press, 2007, first published 2005), 5.

⁴⁷ Virilio, *The Original Accident*, 10. (italics in original).

⁴⁸ Ibid., 3.

⁴⁹ Ibid., 23.

the past was intact and free from the fallout of the event but from that moment on, the not yet existing future was already contaminated, already carrying a direct link to the explosion itself.⁵⁰ We continue to see this complexity play out, as Charlie Loyd articulates with regard to California's wild fires: "Disasters are never natural in the ordinary sense because they always could have been avoided or mitigated by human choices. In this way of thinking, everything that we call a disaster started as a hazard, and hazards themselves are only risks, not harms. If and how hazards become disasters is shaped by governmental, infrastructural, and economic choices, conscious or unconscious. [...] This isn't subtle; it's what we mean by responsibility."⁵¹

In essence, the culture that we have created shapes the disasters that occur within it and, following Virilio, this is an inescapable fact. In order to shape disaster differently then, we must look to the development of alternative systems and other ways of defining and shaping culture. Perhaps, then, some of the disasters we know now would not occur at all, instead, they might remain relegated as hazards, as risks to be overcome through cultural choices and decisions. An example of what I mean here is provided by Sunny Singh who differentiates between capitalistic systems and the necrocapitalistic, based on the ways in which a society's trade and industry are "founded on, linked to and dependent directly or indirectly on death and the profits accruing from it."⁵² Western society is built upon "and inextricably linked with the Enlightenment, slave trade, the colonial enterprise, [and the] Industrial Revolution [...]"⁵³ It is a culture that has been developed on the foundation of the death of others. The implication here is that we cannot look solely to our economic model as responsible for the predicament we now face. Instead, the specific priorities and cultural norms negotiated through its development are pertinent to consider. Singh also reminds us that new theories developed from within this model—those on both the left and the right—have been shaped by the Western perspective, illuminating that even

⁵⁰ Ibid.

⁵¹ Charlie Loyd, "A Disaster of Our Own Making - California was always going to burn—but it should have happened differently," *The Atlantic*, Nov 20, 2018, <https://www.theatlantic.com/science/archive/2018/11/californias-disaster-is-of-our-own-making/576241/>.

⁵² Sunny Singh, "The end of necro-capitalism (but not necessarily capitalism)," *Media Diversified*, November 7, 2017, <https://mediadiversified.org/2017/11/07/the-end-of-necro-capitalism-but-not-necessarily-capitalism/>.

⁵³ Singh, "The end of necro-capitalism."

those working to find solutions within the system itself are influenced by the post-colonial framework. I propose that we need to look outside of this system if we want to truly find solutions to the pressing issues of our time, themselves created as an inevitable result of the necrocapitalistic model: climate change, social justice, inequality, and oppression. By looking to other systems of knowledge, both human and non-human, we might find alternatives capable of helping us through disaster.

In order to consider how another system might respond to disaster differently, I first want to consider how responses to disaster occur *now*, within the current system. I begin with a focus on how it is that panic operates in relation to the framework of disaster and how these types of responses may in turn pave the way for future disasters to come. Sociological research into public response to disaster shows overwhelmingly that in general, individuals *do not panic*. On the contrary, responses are often calm and measured with a profound sense of caring for one another. In their 2002 essay *Elites and Panic: More to Fear than Fear Itself*, Lee Clarke and Caron Chess quote a 1954 publication by Quarantelli where he notes that panic is a relatively uncommon reaction during disasters.⁵⁴ In a later publication, Clarke further notes that Quarantelli considered panic to be relevant only within popular discourse having no place within social sciences. Speaking about his work at the Disaster Research Centre, Quarantelli elucidates: “During the whole history of [our] research involving nearly 700 different field studies, I would be hard pressed to cite... but a very few marginal instances of anything that could be called panic behavior.”⁵⁵ Later in the essay, Quarantelli reiterates the sentiment, this time using bolder language, announcing that he believed “the concept of panic within collective behavior in sociology may disappear as a technical term in the future.”⁵⁶ Despite this reality, popular media culture—movies, television, social media, news outlets—still instill in us the overwhelming sense that the opposite is true.

⁵⁴ Lee Clarke and Caron Chess, “Elites and Panic: More to Fear than Fear Itself,” *Social Forces* 87 (2008), 993.

⁵⁵ From the Disaster Research Center website: DRC was established at The Ohio State University in 1963 by Professors E.L. Quarantelli, Russell Dynes and J. Eugene Haas and moved to its current location at the University of Delaware in 1985. The Center was the first in the world devoted to the social scientific study of disasters. Disaster Research Center; drc.udel.edu; Lee Clarke, “Panic: Myth or Reality?” *Contexts* 1, no. 3 (August 1, 2002): 24, <https://doi.org/10.1525/ctx.2002.1.3.21>.

⁵⁶ Clarke and Chess, “Elites and Panic: More to Fear than Fear Itself,” 993.

Although the impression disseminated by media culture doesn't reflect the general response of individual citizens who experience large-scale disasters (as anyone who has survived one will likely confirm), it is when one extends the response to governments and those in positions of power that an explanation of the phenomenon manifests. Research looks to ways in which panic is fostered and perpetuated during disaster, often by governments and agencies in power and often with concrete goals in mind. Clarke and Chess define panic as a breakdown in social order as the result of fear, which in turn can be responsible for creating more danger.⁵⁷ Considering the political and practical reasons why panic occurs, they specifically look at 'elite panic,' which is often seen in times of disaster and is often itself considered to be a creator of disastrous circumstances. Citing moral panic theory researchers, their essay clarifies the ways in which elites (politicians, those in control of the media, those with economic and or stakes of power within a community) create disproportionate levels of fear post-disaster as a way to deflect attention from underlying social problems and to further their own interests.⁵⁸ They cite a report by Kathleen Tierney who looked closely at elite panic in the aftermath of Hurricane Katrina (2005), a disaster where the response has been thoroughly investigated: "Elite panic was shockingly evident during Katrina, as evidenced by media and public officials' obsessions with looting and lawlessness, the issuing of shoot-to-kill orders, arising primarily out of a concern with property crime; and the rush to act upon rumors that circulated regarding the 'savage' behavior of lower-class community residents, immigrants, and people of color."⁵⁹ In the case of Katrina, this unfounded panic itself created a disaster in its own right, illustrating that the conditions created by elite panic often further the inequitable divisions already occurring within society. Naomi Klein further contextualizes the occurrence of elite panic as strategy in her framing of the shock doctrine. Exposing the ways in which the exploitation of disaster and crisis have been utilized as tools of economic strategy, she reveals a number of incidences where the strategy has been applied: "That is how the shock doctrine works: the original disaster—the coup, the terrorist attack, the market meltdown, the war, the tsunami, the hurricane—puts the

⁵⁷ Ibid., 998.

⁵⁸ Ibid., 1001.

⁵⁹ Ibid., 1003.

entire population into a state of collective shock.”⁶⁰ In the case of New Orleans, Klein points to the think tanks and land developers who controlled much of the narrative post-Hurricane Katrina noting that at the time “it was clear that this was now the preferred method of advancing corporate goals: using moments of collective trauma to engage in radical social and economic engineering.”⁶¹



Figure 5. Image illustrating media bias during Hurricane Katrina, from: W. Island. “People of Color Face Tremendous Stereotypes During Times Of Catastrophe.” Huffington Post, 10/02/2017. https://www.huffpost.com/entry/the-media-continues-to-stereotype-people-of-color_b_59d29ba1e4b043b4fb095b9a [original images by Dave Martin for the Associated Press & Chris Graythen for AFP/Getty Images].

Returning to Virilio, the uneven distribution of wealth across communities is the substance responsible for creating the accident—in this case, the false panic that in turn manifested in violence and injustice in the post-disaster scenario. Such a social climate will always lead to disaster; its very existence wills it so. Political scientist Antonio Y. Vazquez-Arroyo teases apart this distinction between what he refers to as visible and non-visible disasters. He describes

⁶⁰ Naomi Klein, *The Shock Doctrine: The Rise of Disaster Capitalism* (Vintage Canada, 2007), 19.

⁶¹ *Ibid.*, 9.

catastrophic events, or “big C” *Catastrophes*, contrasting them with structural catastrophes (like colonialism, and capitalism) or “small c” *catastrophes*.⁶² Sometimes, notes Vazquez-Arroyo, a *Catastrophe* is just the “crystallization of catastrophe,” the moment when the framework of the underlying structure is made visible.⁶³ Like Virilio, he sets up the relationships between the two forms of catastrophe, emphasizing that the one often propels the other: *Catastrophes*, once normalized can in turn become *catastrophes* which can then go on to mediate new *Catastrophes*. Vazquez-Arroyo presents colonialism and capitalism here by way of example: the violence associated with conquest, or *Catastrophe*, turns into *catastrophe* once normalized, seen for example in the structural institutions that ensure the perpetuation of colonial thought—like those facilitating wealth disparities within a capitalistic system. In turn, these now normalized *catastrophes* can themselves mediate *Catastrophes*, examples of which can be seen in the rise of famine or global warming.⁶⁴



Figure 6. Screenshot of a Twitter moment, tweet originally posted at 20:28, 11 Oct 2017 by user: @jdhein22.

⁶² Antonio Y Vazquez-Arroyo, “The Antinomies of Violence and Catastrophe: Structures, Orders, and Agents,” *New Political Science* 34 (June 2012): 213.

⁶³ *Ibid.*, 213.

⁶⁴ *Ibid.*, 214.

As Vazquez-Arroyo's example illustrates and by looking back to Rosenthal's list of societal elements with relationships to disasters (the social, environmental, cultural, political, economic, physical and technological), we can see how the many layers of a society are influenced and shaped by larger economic structures. Put another way, capitalism has a defining impact on the elements of our society known to contribute to disasters and as Singh reminds, our specific form of necrocapitalism ensures that these impacts will be distributed with prejudice.

One only need look to the strategies being put into place (albeit with great resistance) to help combat the climate crisis in order to witness the purveyance of capitalism at the core of our societal world view. Thus far, Canada's primary response to climate change, enacted after committing to the 2016 Paris Agreement, has been an economic one.⁶⁵ Whether a carbon tax or cap and trade, the current working strategies for combating Global Warming have been rooted within a capitalistic model. The solutions, from the perspective of a Western capitalist society, show promise within the system itself but it is hard to imagine how solutions so closely tied to the very system responsible for the bulk of the crisis in the first place will prove successful at the scale needed in order to survive it. T.J. Demos, in his *Art After Nature: The Post-Natural Condition* notes that "ecology has become further intertwined with economic calculations and legal regulations."⁶⁶ As he declaratively summarizes: "the solutions to the environmental crisis must precede and predetermine economic decisions, not vice versa."⁶⁷

⁶⁵ Adopted by consensus after the 2015 United Nations Framework Convention on Climate Change, the Paris Agreement represents a global response to the threat of climate change. As of this writing, 185 parties have ratified the agreement of the total 197 present at the convention. From: "Paris Agreement - Status of Ratification," United Nations, Climate Change; <https://unfccc.int/process/the-paris-agreement/status-of-ratification>. The Agreement's central aim is to "strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change." Ibid.

⁶⁶ T.J. Demos, "Art After Nature: The post-natural condition," in *Public Servants*, eds. Johanna Burton, Shannon Jackson and Dominic Willsdon (The MIT Press, 2016), 350.

⁶⁷ Ibid., 354.

Political theorist Chantal Mouffe offers the example of the European Union as a site where the role that economic systems play in defining a society can be considered, and her example can be further expanded upon to consider the links to incidences of disaster. Mouffe notes that the EU has primarily been built around a common market not a common will and thus is “composed of consumers, not of citizens.”⁶⁸ When considered through this lens, Mouffe notes that it is not surprising that the current debates surrounding immigration and migration in the EU are having such a devastating impact. Applying her example to discourse in disaster studies, it becomes clearer how the economic decisions of the EU are implicated in the creation of the European migrant crisis, one of the most profound disasters of our time. Similar to T.J. Demos’ considerations of the environmental crisis, Mouffe reveals the flaws that arise when economic decisions supercede social ones.

Claire Bishop helps tease apart Mouffe’s philosophy, which centres around the concept of *agonism*, the notion that, in order to function properly, a democratic society is one in which “relations of conflict are sustained, not erased.”⁶⁹ A healthy democracy requires that multiple perspectives are continually challenged and debated in order to create hegemonic principles capable of shifting in ways that better reflect the diversity of the masses. The alternative is not a democratic model at all but in fact an authoritarian one. For Mouffe, the capitalistic system has led to a suppression of dissension within the social sphere, effectively eliminating agonism and transforming us all into “passive functions of the capitalist system.”⁷⁰

It is in Mouffe’s perspectives on agonism that I see a connection to concepts of disaster, and I am interested in envisioning ways that the framework of disaster, which necessarily exposes us to alternative ways of being, might relate as a tool to create space for the agonism she outlines. Writing about art in post-Occupy Wall Street America, Yates McKee evokes Michel de Certeau’s theory of *tactics* as means for disrupting the status quo.⁷¹ In *The Practice of Everyday*

⁶⁸ Chantal Mouffe, *Agonistics: Thinking The World Politically* (London – New York: Verso, 2013), 59.

⁶⁹ Claire Bishop, *Antagonism and Relational Aesthetics*, October 110 (Fall 2004): 51-79, 2004.

⁷⁰ Mouffe, *Agonistics: Thinking The World Politically*, 86.

⁷¹ Yates McKee, *Strike Art: Contemporary Art & the Post-Occupy Condition* (Verso, 2007), 68.

Life, de Certeau looks to how “users make (*bricolent*) innumerable and infinitesimal transformations of and within the dominant cultural economy in order to adapt it to their own interests and their own rules,” by considering the “procedures, bases, effects, and possibilities of this collective activity.”⁷² de Certeau differentiates between strategies and tactics, based on their proximity to dominant structures: with *strategy* being the “calculation (or manipulation) of power relationships that becomes possible as soon as a subject with will and power (a business, an army, a city, a scientific institution) can be isolated.”⁷³ *Tactics*, on the other hand, are calculated actions that are determined when the isolation of an external cannot be located. Tactics are the tools of those embedded within systems that are all consuming and all powerful. “The space of a tactic is the space of the other.”⁷⁴ The tactic is unexpected, it ‘poaches’ from the strategies outlaid by larger systems: “It does not, therefore have the option of planning general strategy and viewing the adversary as a whole within a district, visible and objectifiable space. It operates in isolated actions, blow by blow. It takes advantage of ‘opportunities’ and depends on them, being without any base where it could stockpile its winnings, build up its own position, and plan raids.”⁷⁵ Throughout my project then, I shift between both terms: at times what begin as tactics necessarily become strategies once research is considered and approaches devised. I want to further tease apart McKee’s emphasis on disruption by formulating an argument whereby tactics might be considered in relation to the underlying structure of disaster, whose disruptions carry with them the power to absolutely shift the course of a community.

In her tracing of the history of the matsutake mushroom, Anna Lowenhaupt Tsing considers *disturbance* from an ecological perspective relating it less to disaster and more to *change* that has the potential to realign possibilities and open space for action.⁷⁶ “Humanists, not used to thinking with disturbance, connect the term with damage. But disturbance, as used by ecologists, is not

⁷² Michel de Certeau, *The Practice of Everyday Life* (University of California Press, 1984), xiii; I am also taken by de Certeau’s use of the term ‘users’ as a stand in for citizens. It reminds me of the ways in which users of certain social media platforms, like Twitter for example, have reshaped the platform itself through their use of the app.

⁷³ de Certeau, *The Practice of Everyday Life*, 35-36.

⁷⁴ *Ibid.*, 37.

⁷⁵ *Ibid.*, 36.

⁷⁶ Anna Lowenhaupt Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (Princeton University Press, 2015), 152.

always bad—and not always human.”⁷⁷ In ecological systems, disturbance is often required in order to perpetuate regrowth. Take burning practices as an example, where old growth forests are periodically burned in order to facilitate growth: “Disturbance opens the terrain for transformative encounters, making new landscape assemblages possible.”⁷⁸ To better understand human and non-human relationships in industrial ruins, Tsing, along with Elaine Gan and Daniel Sullivan, look to human disturbance as a backdrop for considering the successional dynamics of a former brown-coal mine and the subsequent proliferation of non-human species within it, including Pine, Birch, Fungi and Red Deer.⁷⁹ Through this study, and along with Nils Bubandt, Tsing coins the term ‘feral dynamics’: “anthropogenic landscapes set in motion not just by the intentions of human engineers but also by the cascading effects of more-than-human negotiations” to help illustrate the complexity of disturbance.⁸⁰

Deciding what counts as disturbance is always a matter of point of view.⁸¹

Disturbance holds within it the potential for growth and can serve as a working model for artistic practice. Mouffe suggests it is the artists’ role to reintroduce agonism as a strategy for subversion, presenting the objective of artistic practice as one that is capable of facilitating the development of new social relations.⁸² Following these calls to work differently within the systems of control, I look closer to the ways in which we currently communicate and socialize for tactics to pull from for potential disturbance. Right now, our primary methods of communication, inherently wrapped up with the social, are overwhelmingly shaped by online systems.

⁷⁷ Tsing, *The Mushroom at the End of the World*, 160.

⁷⁸ Ibid.

⁷⁹ Elaine Gan, Anna Tsing, and Daniel Sullivan, “Using Natural History in the Study of Industrial Ruins,” *Journal of Ethnobiology*, 38(1): 39 & 50, <https://doi.org/10.2993/0278-0771-38.1.039>.

⁸⁰ Nils Bubandt and Anna Tsing, “Feral Dynamics of Post-Industrial Ruin: An Introduction,” *Journal of Ethnobiology*, 38(1): 1. <https://doi.org/10.2993/0278-0771-38.1.001>.

⁸¹ Tsing, *The Mushroom at the End of the World*, 161.

⁸² Mouffe, *Agonistics: Thinking The World Politically*, 87.

Klein draws links between the visibility of oppression through online communities and the current climate crisis through the mapping of the hashtag #BlackLivesMatter, used since July 2013 in response to the overwhelming number of videos and accounts of Black American citizens, especially Black men, being murdered throughout the United States of America.⁸³ The hashtag quickly became a tactic for shining light on the otherwise often invisible reality of dispossession and oppression faced by Black people in a society founded on white supremacy. Recognizing that the unequal distribution of climate change impacts are the direct result of a racist system, Klein links the ongoing violence made visible through #BlackLivesMatter and the refusal of governments to tackle, at times even acknowledge, the climate crisis: “Racism is what has made it possible to systematically look away from the climate threat for more than two decades. It is also what has allowed the worst health impacts of digging up, processing and burning fossil fuels—from cancer clusters to asthma—to be systematically dumped on [I]ndigenous communities and on the neighborhoods where people of colour live, work and play.”⁸⁴

If we refuse to speak frankly about the intersection of race and climate change, we can be sure that racism will continue to inform how the governments of industrialized countries respond to this existential crisis.⁸⁵

⁸³ #BlackLivesMatter was first used in July 2013 by “activists Alicia Garza, Patrisse Cullors, and Opal Tometi in the wake of George Zimmerman’s acquittal for second-degree murder of unarmed Black teenager Trayvon Martin.” The hashtag gained traction in August 2014, “partly due to the slogan’s frequent use in the context of the Ferguson protests.” From: Deen Freelon, Charlton D. McIlwain, and Meredith D. Clark, *Beyond the Hashtags #Ferguson, #Blacklivesmatter, and the online struggle for offline justice* (Washington, DC: The Center for Media & Social Impact, February 2016), 9.

⁸⁴ Naomi Klein, “Why #BlackLivesMatter Should Transform the Climate Debate What would governments do if black and brown lives counted as much as white lives?” *The Nation*, December 12, 2014. <https://www.thenation.com/article/what-does-blacklivesmatter-have-do-climate-change/>

⁸⁵ Klein, “Why #BlackLivesMatter.”

But how might we begin to make society differently before disaster occurs? What might this new world look like? I think social media, where so many individuals share their perspectives, is a good place to start. It has, after all, made visible the voices of those otherwise on the margins of our stratified systems. Despite its insistence on being free and open and of the people, social media has also been developed in tandem with capitalistic systems and it strongly reflects the system that created it. Considering this paradox, I wonder: how might we find tactics within it for better understanding the underpinnings of society in an effort to shape new forms of knowledge and in turn new, more equitable systems?

In her 2018 essay “A Sea of Data: Pattern Recognition and Corporate Animism,” Hito Steyerl considers the power of pattern recognition in online environments, positioning the inherent bias within what appears to be random as a reflection of the larger systems that online spaces have been created within. Dissecting *apophenia*, defined as “the perception of random patterns within random data,” Steyerl sheds light on how it is that neural networks recognize patterns while providing tangible suggestions as to how patterns in larger systems might also be discovered: “in order to ‘recognize’ anything, neural networks need first to be taught what to recognize. Then, in a quite predictable loop they end up ‘recognizing’ the things they were taught.”⁸⁶

By revealing how it is that online networks function, Steyerl provides a working model to start from; a methodology for seeking out strategies in order to develop new tactics. She reminds that this method of seeking out patterns in data has a history of real world application by looking to the eras-old practice of searching for answers in the stars. Steyerl notes that, projecting images onto the constellations “served as working hypotheses to eventually come up with fundamentally different worldviews.”⁸⁷ This searching of greater patterns within the cosmos in turn changed the organization of society:

⁸⁶ Hito Steyerl, “A Sea of Data: Pattern Recognition and Corporate Animism,” in *Pattern Discrimination, In Search of Media*, eds. Clemens Apprich, Wendy Hui Kyong Chun, Florian Cramer, and Hito Steyerl (University of Minnesota Press and meson press, 2018), 8 & 13.

⁸⁷ Steyerl, *A Sea of Data*, 14.

The analysis of planetary and star movements enabled the development of the calendar and agriculture. Cue irrigation, storage, breeding, architecture, sedentary lifestyles, and so on. Storage created the idea of property. Bands of hunters and gatherers were replaced by proto-states of farmer-kings and slaveholders, by vertical social hierarchies. Apophenia—as a part of magical thinking—contributed to all these transformations.⁸⁸

Steyerl's statement simplifies in a way that skips past large swaths of history and complexity, and shouldn't be read in anthropological terms. Her approach is akin to Virilio's, looking less to direct correlations, and instead to conditions of possibility from a position of hindsight. It's a strategy that I pull from as a part of methodology, and as a way to draw attention to complexity while simultaneously searching for solutions within it. Steyerl is searching for patterns, and using this strategy of pattern recognition as a guide, I incorporate this approach as a tactic for better understanding how future communities might develop and function. Again taking cues from both Tsing and Mouffe, I see the strategy of first recognizing these patterns and then imagining alternatives, as a form of disturbance that might help unsettle the structures inherent within current systems. Looking for approaches to deal with disaster, I seek out patterns of overlap; recognizable forms that might be shaped in a way to instigate the radical change Davis refers to. Next, in Chapter Three, I consider what patterns might be found in the ways that both communities and artists have dealt with disasters in the past.

⁸⁸ Ibid., 15.

Interstice One



Figure 7. Documentation from the *BAD STARS* exhibition at Trinity Square Video (2018), multi-video installation & vinyl prints, C. Battle, 2018. Image credit: Jocelyn Reynolds.

A multiple video installation, *BAD STARS*, which debuted the spring of 2018 at Trinity Square Video in Toronto, incorporates text excised from news sources pairing collage video against references to recent disastrous events.⁸⁹ Two GIFs documenting meteors and impact craters loop against colourful vinyl collages constructed of plants able to resist and reclaim the earth of toxic substances. A central video consisting of Google Earth images of Sarnia, Ontario shapes a narrative linking together geomythology, the death of stars, satellite mapping and air pollution; overall suggesting that the technologies monitoring and representing the earth back to us might also be forewarning us of the environmental repercussions of industrial pollution.⁹⁰

⁸⁹ Text in the works was gathered from news articles referring to mass shootings in the USA, bombings in Syria, and earthquakes in numerous locations.

⁹⁰ Geomythology is the study of myths and legends containing references to astronomical and geological phenomena.



Figure 8. Documentation from the *BAD STARS* exhibition at Trinity Square Video (2018), multi-video installation & vinyl prints, C. Battle, 2018. Image credit: Jocelyn Reynolds.

Along with the video works, presented on a series of screens throughout the space, nineteen photographs, printed on vinyl and framed within the format of email conversations, were installed on a central wall. Contributed by an interdisciplinary group, the photos represent a variety of disasters from a number of perspectives and scales. Helping to forward the discussion surrounding the complexity of disaster, the contribution of images aids in the widening of our considerations as to what constitutes a disaster while also providing context for the development of additional programming.

In the Toronto debut of the project, three discursive events invited additional perspectives into the space of the gallery to help broaden the conversation. Michael Williams, an astronomer

working with the planetarium at the University of Toronto, provided an educational talk about meteorites, asteroids and mass extinctions at the end of the Cretaceous period, as well as how their studies have expanded our understanding of the early solar system. The Indigenous Environmental Justice Project—a SSHRC-funded initiative whose research aims to develop a distinctive environmental justice framework informed by Indigenous knowledge systems, laws, concepts of justice and the lived experiences of Indigenous peoples—was invited into the space of the gallery to present their research. The final event tied to the BAD STARS exhibition in Toronto included a screening of two international artists' video works programmed by the re:assemblage collective. Dealing with issues of migration and immigration, the program offered an opportunity to experience perspectives as visualized by other artists: Florencia Levy (Argentina) + Midi Z (Taiwan/Myanmar).

Overall, the BAD STARS project seeks to approach disaster as both subject and framework. The video and GIF works take on the idea of disaster as subject, creating a space within the gallery where we might reflect on current disasters while also imagining a different future. The photographs and discursive programming engage with disaster as framework; bringing others together to shape space for community building through shared experience. I see the bringing of an interdisciplinary group into the space of the gallery as a unique opportunity to introduce art audiences to research they otherwise might not have as easy access to while simultaneously offering scientists and researchers insight into perspectives shared across artistic discourse. This element of the project stems from a methodology rooted in prioritizing conversation as a strategy for the development and strengthening of communities. Inviting other voices into the space of the gallery decentres my own position, instead opening up a platform for a variety of perspectives. This insistence on a multiplicity of voices within the work can help foster the agonism described by Chantal Mouffe, allowing for a space where new visions of democracy might begin to take shape.



Figure 9. Documentation from the *BAD STARS* exhibition at Trinity Square Video (2018), multi-video installation & vinyl prints, C. Battle, 2018. Image credit: Jocelyn Reynolds.

Chapter Three

The Unfolding of Disasters on the Ground: Community Response and Artistic Interventions.

I mean, when you read those pessimistic disaster novels about the rioting cannibalistic underclasses who'll come for you when the lights go out, you'll find that the people you're meant to empathize with are the good ones: the ones who are picking up the pieces and starting over again. The helpers. That's who we root for. The helpers are right here. When the lights go out, the helpers find their flashlights, clean out their freezers, and have a barbecue for the neighborhood.⁹¹

Cory Doctorow's quote is from a short article he wrote about his 2017 novel *Walkaway* "a utopian disaster novel [...] about people doing right for one another under conditions of adversity."⁹² Unlike many of his other fictional works, Doctorow describes *Walkaway* as a "deliberate, tactical rebuttal of the science fiction stories (including [his] own) that resort to the easy, lazy trope of having civilization erupt into violence, rape, and chaos the minute that technology fails."⁹³ This is a trope that we are accustomed to seeing and, as research by Quarantelli has shown, one that is entirely inconsistent with how communities cope during and after disastrous encounters. How, then, do communities actually respond to and deal with disaster? Throughout this chapter, I look for patterns across the ways in which post-disaster scenarios play out.

Furthering the established research in social sciences about how communities behave in times of

⁹¹ Cory Doctorow, "Weaponized Narrative," *Locus Online*. May 3, 2017, <https://locusmag.com/2017/05/cory-doctorow-weaponized-narrative/>.

⁹² *Ibid.*, 2.

⁹³ *Ibid.*

disaster, Rebecca Solnit's *A Paradise Built in Hell* provides a number of historical examples of how *the social* is enacted after catastrophic events, illustrating that in general, individuals are overwhelmingly altruistic in post-disaster situations. She offers two reasons for this behaviour: first, in the wake of a disastrous event people have to engage and respond with urgency, which doesn't allow time for anti-social behaviours such as greed or selfishness; and second, people feel solidarity as well as empathy as they go through tragic experiences together—resulting in a rise in feelings of the social.⁹⁴ Similar to Clarke and Chess who differentiated between how publics respond to crisis versus those in power, Solnit's book also spends a great deal of time outlining incidents of elite panic in post-disaster environments. She suggests that the phenomenon occurs precisely because of this working together seen by citizens during and after disastrous events: “One reason that disasters are threatening to elites is that power devolves to the people on the ground in many ways: it is the neighbors who are the first responders and who assemble the impromptu kitchens and networks to rebuild. And it demonstrates the viability of a dispersed, decentralized system of decision making.”⁹⁵ Solnit also suggests the links between this altruism and revolution, noting that by demonstrating what is possible within society, what is always there, invisible and just under the surface, disasters reveal our resiliency and our want for participation and purposefulness. This prefigurative resolve is entirely fear inducing to the elites in power.⁹⁶ It is this possibility that experiencing and considering disaster might provide that I am especially interested in, again from Solnit: “Disaster may offer us a glimpse, but the challenge is to make something of it, before or beyond disaster: to recognize and realize these desires and these possibilities in ordinary times.”⁹⁷

A 2017 study of earthquake-prone *comunas* in Chile provides quantitative understandings of the altruism Solnit discusses in disaster prone communities. The study, *Natural disasters and indicators of social cohesion*, examined responses to earthquakes on both short- and long-term

⁹⁴ Rebecca Solnit, *A Paradise Built in Hell: The Extraordinary Communities That Arise in Disaster* (Penguin Books; Reprint edition, 2010), 16 & 56.

⁹⁵ Solnit, *A Paradise Built in Hell*, 483.

⁹⁶ *Ibid.*, 483 & 484.

⁹⁷ *Ibid.*, 485.

timelines comparing the social behaviour of communities more likely to experience earthquake events to those less at risk. Their findings were clear: not only did the earthquakes promote social cohesion directly following, but continued long after the events occurred (social cohesion was measured by a series of factors including rates of volunteerism, giving to charity, and participation in local politics).⁹⁸ Those communities at greater risk of experiencing earthquakes in the future showed tendencies to continually promote and encourage social cohesion on a daily basis: “People seem to compensate for worse environmental conditions by being more cooperative.”⁹⁹

My research is invested in considering the possibilities of what might be opened up by thinking about the byproducts of disaster, as seen through this altruism, for example. I see this potential of reshaping our expectations and experiences of disaster as a potential tactic to help shape a more just future. Looking to this pattern of response, I wonder: how might the behaviours seen in post-disaster communities be normalized and utilized outside of the constructs of disaster? Might it provide a useful tactic to assuage some disasters altogether? Reflecting on this inherent altruism, activists and artists have utilized multiple strategies as tools for drawing attention to and responding to disaster. Activists, often more directly involved on the ground in times of disaster—responding to those “big C” Catastrophes as defined by Antonio Y. Vazquez-Arroyo—provide hands-on examples of how to work with communities to overcome and tackle post-disaster conditions.

In the wake of Hurricane Katrina in September 2005, one of the groups first on the ground in New Orleans was the Common Ground Relief, then a volunteer organization whose efforts focused on “providing housing, health, clothing, pro bono legal services, and other core needs to the residents of New Orleans.”¹⁰⁰ Recognizing the need to help rebuild sustainable communities

⁹⁸ A Calo-Blanco, J Kovárik, F Mengel, JG Romero, “Natural disasters and indicators of social cohesion,” *PLOS ONE* 12(6) (2017). <https://doi.org/10.1371/journal.pone.0176885>.

⁹⁹ Calo-Blanco, Kovařák, Mengel, and Romero, “Natural disasters and indicators,” 10.

¹⁰⁰ “About Us,” Common Ground Relief; accessed February, 2019, <https://www.commongroundrelief.org/>.

after the devastating storm, Common Ground ended their reliance on large numbers of volunteers in 2007 “in order to create employment and job training opportunities for residents displaced by hurricanes Katrina and Rita.”¹⁰¹ In addition to rebuilding 3,000 houses, and providing bioremediation services for mold and soil toxin removal, Common Ground Relief has since become a decentralized network made up of a number of different operations including legal clinics, women’s and family shelters, neighbourhood centres, food and clothing distribution centres, and health clinics.¹⁰² Common Ground Relief’s diversified approach was to provide support where it was required, letting the needs of post-hurricane New Orleans residents dictate their efforts. Looking beyond the hurricane itself, the group continues to focus on programs and initiatives with an eye on the future, aiming to reshape how the city responds to disaster as a preventative measure. As such, since 2013, Common Ground Relief has revised its mission, prioritizing the restoration and preservation of Louisiana’s wetlands: “to create resilient Gulf Coast communities that are environmentally sustainable, financially viable and personally cohesive.”¹⁰³ Through this work the group has moved beyond support in the post-disaster scenario and into “community transformation and sustainability,” thereby reshaping the ways future disasters might occur.¹⁰⁴

Strategies for responding to disaster via artistic practice manifest differently than those engaged in direct community activism but, often, the two engage in similar tactics. Artists take on issues related to disaster and collective crisis in a multitude of ways—at times teetering into realms that look similar to the role that activists claim. The distance artists often have from ‘big C’ Catastrophic events allows them to broaden their responses and tackle the structural, ‘little c’ catastrophes made visible during times of crisis. Keeping with strategies seen in post-Katrina New Orleans, an example is *Transforma*, a collective project initiated by artists Jessica Cusick,

¹⁰¹ Ibid.

¹⁰² Ibid.

¹⁰³ Ibid.

¹⁰⁴ Ibid.

Sam Durant, Rick Lowe, and Robert Ruello:¹⁰⁵

As practitioners within the field, we had seen art and culture become increasingly commercialized, limiting the opportunities for artists to work in public or socially engaged practices. To counter this trend, Transforma strategically supported such practices with direct financial assistance, technical assistance, and networking opportunities. Generally it encouraged a greater emphasis on the role of artists, the arts, and culture in addressing the social and political needs that confront our society.¹⁰⁶

One of Transforma's projects, *Paydirt/Fundred* (2006-ongoing) initiated by artist Mel Chin, stemmed from research into preexisting conditions of New Orleans made visible by the storm: "Chin discovered that New Orleans was the city with the second-highest levels of lead contamination in the United States. Elevated levels of lead had existed in the soil before Hurricane Katrina, but as a result of the contamination of almost eighty-six thousand properties, nearly 30 percent of the children living in the inner city suffer from lead poisoning."¹⁰⁷ A nationwide, collective drawing project (where 3 million interpretations of the US one-hundred dollar bill were drawn by individuals across the country), *Paydirt/Fundred* aimed to draw attention to the problem while also advocating for funds from Congress to help remove the lead contamination found in New Orleans soil.

This impetus by artists to engage with the social and participation isn't new: "The desire to merge art and life resonates throughout the avant-garde movements of the 20th c and then multiplies across the globe at the beginning of the 21st c."¹⁰⁸ I find this multiplication Nato Thompson alludes to an interesting pattern to recognize, and its implied perseverance uniquely

¹⁰⁵ United States Department of Arts And Culture. *Art Became The Oxygen: An Artistic Response Guide*, by Arlene Goldbard. (NYC, 2017), 25.

¹⁰⁶ Transforma, *PILOT PROJECTS*, 2005-2019. <https://www.transformaprojects.org/#one>.

¹⁰⁷ Transforma, *PILOT PROJECTS*, 3.

¹⁰⁸ Nato Thompson, *Living as Form: Socially Engaged Art from 1991-2011* (Cambridge, Massachusetts and London, England: MIT, 2012), 21.

tied to the ongoing crises we now face in late capitalism. Claire Bishop has written extensively about the conditions under which the increase of socially aware and engaged artistic practice has been seen in the past, noting that: “The clash between artistic and social critiques recurs most visibly at certain historical moments, and the reappearance of participatory art is symptomatic of this clash. It tends to occur at moments of political transition and upheaval: in the years leading to Italian Fascism, in the aftermath of the 1917 Revolution, in the widespread social dissent that led to 1968.”¹⁰⁹

Hurricane Katrina is a prime example as the effects of the natural disaster were intensified by the ongoing crisis of inequality at the municipal, state and federal levels. That is, a disaster of natural origins can't be examined without also considering the structural and societal underpinnings of the cities and communities they occur within (not to mention the fact that many natural disasters have been enhanced by the climate crisis, itself understood to have increased due to human interference). As Teddy Cruz and Fonna Forman note in their ongoing research on civic infrastructure and public culture in US and Latin American cities: “Since the early 1980s, with the ascendance of neoliberal economic policies based on the deregulation and privatization of public resources, we have witnessed how an unchecked culture of individual and corporate greed has produced dramatic income inequality and social disparity.”¹¹⁰ Considering disaster today, and how it is that artists engage with it, requires looking to the complexity of the effects shaped by disaster itself. Taking cues from Bishop: “participation is important as a project: it rehumanises a society rendered numb and fragmented by the repressive instrumentality of capitalist production. Given the market's near total saturation of our image repertoire, so the argument goes, artistic practice can no longer revolve around the construction of objects to be consumed by a passive bystander. Instead, there must be an art of action, interfacing with reality, taking steps – however small – to repair the social bond.”¹¹¹

¹⁰⁹ Claire Bishop, ed. *Participation (Documents of Contemporary Art)* (The MIT Press, 2006), 39.

¹¹⁰ Teddy Cruz and Fonna Forman, “Latin America and a New Political Leadership: Experimental Acts of Coexistence,” in *Public Servants: Art and the Crisis of the Common Good*, eds. Johanna Burton, Shannon Jackson and Dominic Willson, (The MIT Press, 2016), 73.

¹¹¹ Claire Bishop, *Artificial Hells: Participatory Art and the Politics of Spectatorship* (London: Verso, 2012), 11.

Certainly, the rise in artistic participatory projects that we are seeing right now are challenging the ways we think about the social in this age of seemingly endless crises fed to us at a rapid rate via our engagement with social media platforms. Artists have been pushing back, asking us to reconsider how it is that we think of and shape community in our ‘like’ and ‘friend’ dominated virtual social existence. By looking closer to disaster studies, I see potential to take on Mouffe’s conception of an agonistic approach through critical art: “critical art is art that foments dissensus, that makes visible what the dominant consensus tends to obscure and obliterate.”¹¹² I see the space created in the post-disaster neighbourhoods noted by Solnit and measured by the study in Chile, as an underlying structure rich with potential to help shape the agonism promoted by Mouffe. By pulling from the framework that shapes the sense of participation and altruism within groups after experiencing a disaster, and inserting the opportunity for conversation and the introduction of diverse perspectives and ideas, I see the possibility for reshaping the status quo.

One example of this emphasis on participation, is the Social Emergency Response Center (SERC), an artistic project begun by the Design Studio for Social Intervention (DS4SI), founded by Kenneth Bailey in 2005/2006.¹¹³ A creativity lab dedicated to designing and testing social interactions, DS4SI is “Situated at the intersections of design thinking and practice, social justice and activism, public art and social practice and civic/popular engagement.”¹¹⁴ The Social Emergency Response Centers were started “to help people understand the moment we’re in, from all different perspectives [...] SERCs are temporary, pop-up spaces that help us move from rage and despair into collective, radical action.”¹¹⁵ Working to instill new connections and strategies for the contemporary moment, SERCs are both reactive and preparatory, calling for the

¹¹² Chantal Mouffe, “Artistic Activism and Agonistic Spaces,” *Art and Research: A Journal of Ideas, Contexts and Methods* Vol. 1 No. 2 (Summer 2007), 4.

¹¹³ The SERC project came out of the Massachusetts Institute of Technology’s Department of Urban Studies and Planning.

¹¹⁴ “History,” Design Studio for Social Intervention, <http://www.ds4si.org/history>.

¹¹⁵ “Social Emergency Response Center,” Design Studio for Social Intervention <http://www.ds4si.org/interventions/serc>.

need to “Clarify what responses are most effective” through practice.¹¹⁶ By engaging with survival strategies for social crises, SERCs maintain that the introduction of emergency responses into communities *now* are a much-needed act of support: “Social emergency procedures could function as both a reminder of the urgency of the situation and a guide post for how to act in such emergencies.”¹¹⁷

One SERC project, *Public Kitchen* (2011, ongoing), imagines strategies for building public infrastructures differently, and challenges how we consider and claim ‘public space.’ “Public Kitchen is a ‘productive fiction,’ and as such it’s our experimentation with a new, more vibrant social infrastructure.”¹¹⁸ The first Public Kitchen invited more than 100 community members in Boston, Massachusetts to participate in a week-long series of events inspired by the concept of the family kitchen as gathering place. Manifesting across a number of forms, the Kitchen includes shared meals, cooking classes and competitions, a mobile kitchen and food-inspired art.¹¹⁹ The project offers a chance to consider not only how public infrastructure currently operates in the city, but how it might function differently by challenging “the public’s own feelings that ‘public’ means poor, broken down, poorly run, and ‘less than’ private, by creating alternative approaches.”¹²⁰

We still have room to imagine the futures we want to create! Doing this takes experimentation and creativity.¹²¹

Similar to SERC, the Fallen Fruit collective is concerned with reimagining how publics interact

¹¹⁶ Kenneth Bailey and Lori Lobenstine, “A Case for Social Emergency Procedures,” *Design Studio for Social Intervention*, 2.

¹¹⁷ Bailey and Lobenstine, “A Case for Social Emergency Procedures,” 1.

¹¹⁸ Ibid.

¹¹⁹ Ibid.

¹²⁰ Ibid.

¹²¹ Ibid.

with “the margins of urban space, systems of community and narrative real-time experience.”¹²² It is a collective of artists based out of Los Angeles initially conceived of in 2004 by David Burns, Matias Viegner and Austin Young and since 2013, continued by Burns and Young.¹²³ They utilize fruit as their chosen material for public projects, installations, and video works that “explore the social and political implications of our relationship to fruit and world around us.”¹²⁴ In 2004, the collective began by mapping fruit trees growing on or over public property throughout Los Angeles, making the information available to the public and encouraging others to discover and pick the fruit for themselves. The project evolved into *The Endless Orchard* (2017-ongoing), becoming a movement of citizens working to transform their own neighbourhoods through the planting, mapping and sharing of fruit: “The Endless Orchard (endlessorchard.com) is free to use. Anyone, anywhere, can plant a fruit tree along their property’s publicly accessible margins and map it on the Endless Orchard. With each new tree, the orchard grows larger and is shared with more people. Participants can map accessible fruit trees that already exist in your neighborhood, or plant trees in collaboration with cities in public spaces and parks.”¹²⁵

In 2013, as a part of the Endless Orchard project, Fallen Fruit planted a public fruit park in an unincorporated community in Los Angeles. Supported by the Los Angeles County Arts Commission, the project was initiated to: “‘fulfill a civic purpose,’ said Laura Zucker, the commission’s executive director, addressing the public-health advantage for communities that are so-called food deserts, with few stores and healthy restaurants.”¹²⁶ Consisting of 27 trees planted on public land along with 60 more distributed to residents to plant on their property, Fallen Fruit further expanded the project by hosting a series of *fruit jams*, opportunities for the public to collaborate on collectively made jams, with their street-picked fruit. The jams were made without recipes and Fallen Fruit consider each jam to be a social experiment: “Working

¹²² “About,” Fallen Fruit, <http://fallenfruit.org/about/>.

¹²³ Ibid.

¹²⁴ Ibid.

¹²⁵ Website for Endless Orchard; endlessorchard.com.

¹²⁶ Patricia Leigh Brown, “Tasty, and Subversive, Too,” *New York Times*, May 11, 2013, <https://www.nytimes.com/2013/05/12/us/fruit-activists-take-urban-gardens-in-a-new-direction.html>.

without recipes, we ask people to sit with others they do not already know and negotiate what kind of jam to make: if I have lemons and you have figs, we'd make lemon fig jam (with lavender)."¹²⁷ Through these collaborations, Fallen Fruit engage with publics in generative and restorative ways that, like SERC, encourage participants to reconsider how cities are designed and operate and how they might function anew.

Artistic projects like Fallen Fruit continue a long legacy of artists working with plants as a way to speak about larger societal issues and questions, and it is a thread in the overall pattern that I would like to tease apart further. With histories that predate and have evolved along with humans, plants can provide insight into alternative strategies for coping with disaster. Forced to adapt to human intervention, plants are continually responding to crisis. A number of artist projects offer strategies for considering the parallels that exist between plant ecology and our own communities as well as methods for encouraging us to rethink societal patterns. Agnes Denes' *Wheatfield - A Confrontation: Battery Park Landfill, Downtown Manhattan* planted and harvested wheat on public land, engaging with a number of critical concerns: "*Wheatfield* was a symbol, a universal concept; it represented food, energy, commerce, world trade, and economics. It referred to mismanagement, waste, world hunger and ecological concerns. It called attention to our misplaced priorities."¹²⁸ The hand-sown, 2-acre wheat field planted a mere two blocks from Wall Street and the World Trade Tower and facing the Statute of Liberty (all icons of the fundamental institutions and ideals of Western society), produced 1000 pounds of golden wheat which was harvested and shared as part of an exhibition organized by the Minnesota Museum of Art (1987-90).¹²⁹ Seeds from the harvest were also shared with the public and planted across the globe.¹³⁰

¹²⁷ "Projects," Fallen Fruit, <http://fallenfruit.org/projects/>.

¹²⁸ "Wheatfield," Agnes Denes Studio, written in 1982, <http://agnesdenesstudio.com/works7.html> (italics in original).

¹²⁹ *The International Art Show for the End of World Hunger*, organized by the Minnesota Museum of Art (1987-90).

¹³⁰ "Wheatfield," Agnes Denes Studio, written in 1982, <http://agnesdenesstudio.com/works7.html>.

A longer term reclamation project, Mel Chin's *Revival Field* (1991-ongoing) similarly tackles larger societal issues in an active and hands on way. An ongoing project made in conjunction with senior research agronomist at the United States Department of Agriculture, Dr. Rufus Chaney, *Revival Field* uses hyperaccumulator plants to extract heavy metals from the contaminated soil of a Minnesota landfill.¹³¹ Challenging the impacts of industrialization, the project considers the ways in which our societal decisions influence the land on the long term and actively works to alter that influence. Using a species of *Thlaspi* (common name: pennycress, a genus of herbs of the family Brassicaceae), the ongoing project has seen significant uptake of cadmium from the land, helping to put scientific research into practice. Once the mature plants are harvested, the metal taken up into foliage is then reclaimed through a burning process, yielding metal purer than high grade ore.¹³² By working to reclaim a section of land otherwise made inaccessible because of its toxic condition, *Revival Field* not only has long lasting impacts in the community of Minnesota but also helps us to imagine how we might engage with industrial processes differently.

Trained as an architect, Fritz Haeg's artistic practice is dedicated to engaging with both the land and the ways in which communities engage with and upon it. His *Edible Estates* project (2005-ongoing) began with the removal of a front lawn in Salina, Kansas and its replacement with an edible garden. Now consisting of over 16 gardens in cities across the world, each of the Edible Estates "is very different, designed to respond to the unique characteristics of the site, the needs and desires of the owner, the community and its history, and the local climate and geography."¹³³ Through the redevelopment of spaces within communities, the project asks us to "reconsider our relationships with our neighbors, the sources of our food, and our connections to the natural environment immediately outside our front doors."¹³⁴

¹³¹ "Revival Field," Mel Chin, <http://melchin.org/oeuvre/revival-field>.

¹³² Ibid.

¹³³ "Edible Estates," Fritz Haeg, <http://www.fritzaeg.com/garden/initiatives/edibleestates/about.html>.

¹³⁴ Ibid.

Working closely with publics, these artists help to reinvent and revitalize the ways in which we relate to the land and to one another. “As we say, *the public is a work in progress*. A stronger public—one that can hold its institutions accountable—requires a new scale of civic engagement. There need to be new ways to see and connect among people, new public spaces that encourage dialog, protest and play, and even new public infrastructures that enrich lives and remind us that ‘public’ means all of us. Without these new forms, there will not be the scale of force to demand the changes needed in our civic and private institutions.”¹³⁵

Comfortable within the space of the ‘work in progress’ as noted by DS4SI above, artist projects shift our understandings of how community might operate and remind us that other ways are possible. Using these projects as inspiration, and looking closer to their methods and working models, my research is similarly invested in trying to find new tactics, and considers what possibilities might be found when we draw from other forms of knowing. These strategies offer the potential to engage with the agonism prescribed by Mouffe that works to challenge current systems, develop alternative perspectives, and create principles that counter the dominant model. Looking specifically to plant ecology, I wonder what systems might exist in nature that could serve as a model to pull from. How do other species and systems prepare for, avoid, overcome and heal from disaster, and what might we learn from using their strategies as a model for the generation of our own communities and systems?

Plant ecologist, and writer Robin Wall Kimmerer offers insight into why it is that we might look to ecological systems as sites of tactics for developing stronger, healthier communities. Framing her work from the perspective of Indigenous ways of knowing, her research challenges Western traditions of scientific systems:

¹³⁵ “Civic Engagement,” Design Studio for Social Intervention, <https://www.ds4si.org/civic-engagement> (italics in original).

In the Western tradition there is a recognized hierarchy of beings, with, of course, the human being on top—the pinnacle of evolution, the darling of Creation—and the plants at the bottom. But in Native ways of knowing, human people are often referred to as “the younger brothers of Creation.” We say that humans have the least experience with how to live and thus the most to learn—we must look to our teachers among the other species for guidance. Their wisdom is apparent in the way that they live. They teach us by example. They’ve been on the earth far longer than we have been, and have had time to figure things out. They live both above and below ground, joining Skyworld to the earth.¹³⁶

Kimmerer reminds us that, not only were plants here on the earth longer than humans, with more time to improve on strategies, but that both plant and human evolutionary histories have been shaped through ongoing exchange with one another.¹³⁷ Ecology derives from the Greek word for ‘house’ or ‘living relations’ and the scientific study encompasses the “abundance and relations of organisms and their interactions with the environment.”¹³⁸ Focusing on ecology can help us to think deeply about the world we live in and allows for an approach to looking at the whole through the connections and inter workings of complexity.

It is through this questioning of what plant ecologies might tell us about community where the activism of Common Ground Relief’s work in New Orleans and Fritz Haeg’s Edible Estates come together. Both turn to land reclamation and plant ecology as working strategies for larger social issues. Building solutions from the ground up and refusing to submit to despair, both instead turn to restoration as antidote.¹³⁹ Robin Wall Kimmerer reminds us that “Plants are the first restoration ecologists,” they continually respond and recover from the disasters they encounter, even those new and unexpected disasters entirely shaped by human damage.¹⁴⁰ In

¹³⁶ Robin Wall Kimmerer, *Braiding Sweetgrass, Indigenous Wisdom, Scientific Knowledge, and the Teaching of Plants* (Milkweed Editions, 2013), 23.

¹³⁷ *Ibid.*, 153 & 255.

¹³⁸ “What is ecology?” *Ecology info center*, <http://environment.gen.tr/what-is-ecology.html>.

¹³⁹ Kimmerer, *Braiding Sweetgrass*, 395.

¹⁴⁰ *Ibid.*, 399.

describing the concerns tackled in the Edible Estates project, Fritz Haeg points to the complexity that can be supported by focusing on ecological systems through the project's printed section headings: Our Planet; Our Climate; Our Government; Our City; Our Street; Our Neighbors; Our House; Our Dirt; Our Food; Our Time; Our Modest Monument.¹⁴¹ Similarly, Common Ground Relief sees strategies for strengthening community by looking to how the diverse landscape of the Louisiana coast, "the bays and lakes, barrier islands, cheniers, natural levee forests, swamps, and marshes and cypress forests, [...] work in concert to maintain the ecological resilience of our natural environment."¹⁴²

Common Ground has also integrated this tactic into the very foundation of their collective, adopting the structure of a complex network similar to those found within natural ecosystems. The very ways in which our language often pulls from ecosystems as a way to describe and define community itself is an important pattern to recognize. Terms like: *ecosystem*, and *ecology* are often utilized to describe our societies, especially our technology, despite the often stretching of definitions. In the next chapter, which is split into two parts, I dive deeper into the ways in which our networks are designed, and consider how they might be modeled differently in order to better align with the models from nature so often used to describe them. Looking closer to technology and computer networks, Chapter Four strives to link together how networks function within communities (as laid out here in this chapter), with how networks function within plant ecologies later considered in Chapter Five.

¹⁴¹ Fritz Haeg, *Edible Estates Attack on the Front Lawn. A Project by Fritz Haeg*, 2nd Edition (NY: Metropolis Books, 2010), 16-27.

¹⁴² Common Ground Relief; <https://www.commongroundrelief.org/>.

Interstice Two



Figure 10. *seeds for the end of the world*, C. Battle, 2014, ongoing.

seeds for the end of the world (2015-ongoing)¹⁴³ is an ongoing project where I grow, save and share seeds. Seeds take time to grow, to harvest, to prepare, and to share—an act that I see as gift as much as necessity and survival. As such, the seeds are offered as barter or gift, in an attempt to encourage and support alternative systems of exchange. The title of the project isn't meant to evoke some apocalyptic future as propagated by the movies we watch, but to reframe what our expectations of 'the end of the world' might entail. *seeds for the end of the world* seeks to remind that the end of *this* world is possible and that something different—something better—could replace it. As the seeds are gifted and grown they are meant to help others begin to build a world different from the trajectory it is currently on.

¹⁴³ The title of this project changed after the writing of this document. I have left the original title throughout for the sake of clarity but it should be noted that, in the future, this project is titled: *seeds are meant to disperse*.

As an ongoing and forever growing project, I continue to adapt and rethink strategies as the work strives to be more aware of itself: of the ways in which it might help draw attention to food security & sustainability, species diversification, seed copyright, climate change, urban renewal, and anti-capitalist forms of exchange. Seeds are meant to disperse.

Through seeds and their dispersal, *seeds for the end of the world* actively thinks about both time and space differently: considering ecological change from the scale of the geologic and political change from the scale of the micro gesture. Preparing seed packs each year to be traded and shared, the project is documented and archived on social media as a way to meet and engage with others interested in plants and alternate forms of exchange. To date, I have received a number of trades for the seed packs including artist books, sculptures, jewelry, photographs, as well as other seeds.



Figure 11. *seeds for the end of the world*, C. Battle, 2014, ongoing. Documentation from the *i believe in living* exhibition, curated by Ellyn Walker at Untitled Art Society, where seeds and zines were offered to guests to the gallery in the form of gifts, 2018. Image credit: Katy Whitt.

seeds for the end of the world also includes two zine projects which are traded along with seed packs. The first zine, made especially for the exhibition *i believe in living*, curated by Ellyn Walker for Untitled Art Society (Calgary, 2018) includes gardening and seed saving tips, information about plants and how gardeners might approach growing seeds considering the changing weather patterns due to climate change. The second zine, *in the garden (one)* (2018), documents a summer long project of gathering, identifying, and pressing flowers discovered in my London, Ontario garden. During the summer of 2018, *in the garden (one)* served as starting point for a series of intimate events organized as a part of community-building strategy. The *In the Garden* series consisted of two events where community members were invited to sit in the garden and get to know one another while engaging with plants grown from the *seeds for the end of the world* project. Together we pressed flowers, made sun prints, documented the garden in

water colours, made hand sewn lavender sachets and considered the ways in which plants might help bring us together [see appendix for pdfs of zines and invitations].

I am currently working on a version of the *seeds for the end of the world* project for the John and Maggie Mitchell Art Gallery (MAG) in Edmonton (fall of 2019) as part of the public programming organized for artist Leanne Olson's exhibition. For this occasion, *seeds for the end of the world* will take up conversation with the exhibition by considering waste that is primarily invisible to us, waste that is entrenched in the soil and unidentifiable to the naked eye: contaminates offset from industry and methods of extraction. After conversations with Leanne about her time as an artist in residence at the Edmonton Waste Management Centre and how it is that we might *see* waste differently, my parallel programming has been developed through thinking about waste while considering issues of visibility. That we have built our waste management sites outside of daily view is by design, and I wonder how our relationship to waste might feel different if we had some way to see it anew.

The project looks closer to hyperaccumulators, that is, plants that have the ability to take up more metals than normal, and how they are utilized in phytoremediation projects to help rid toxins from the earth. These unique plants help us to visualize the invisible waste that exists in the soil by using it for different means and turning it into different forms. Inspired by Mel Chin's *Revival Field* (1991-ongoing), and in the spirit of this work, this participatory event incorporates seeds of plants shown to have the ability to take up small amounts of metals in the soil and accumulate it primarily within their roots.¹⁴⁴ Unlike *Revival Field*, the goal of this participatory project isn't intended to remediate a particular plot of land. Instead, I'm interested in how it is that together a

¹⁴⁴ A number of plants already represented in the *seeds for the end of the world* project perform as hyperaccumulators including: sunflowers (*Helianthus annuus*)—Arsenic, Cadmium, Chromium, Copper, Lead, Manganese, Nickel, Polychlorinated Biphenyl, and Zinc; Yarrow (*Achillea millefolium*)—Cadmium; Mustard (*Brassica juncea*)—Copper, Selenium, and Nickel; Chives (*Allium schoenoprasum*)—Cadmium; Radish (*Raphanus sativus*)—Arsenic, Cobalt, Copper, and Nickel; Zucchini (*Cucurbita pepo*)—Arsenic, Cadmium, Lead, and Zinc. From: "Phytoremediation," database by Stevie Famulari, 2007-2011, <http://www.steviefamulari.net/phytoremediation/index.php>.

group might think through this larger issue of invisible waste and how plants might help guide us in this effort. That is, I see the abilities of plants as a critical tool in helping us to imagine and overcome the complexity that exists within larger issues related to waste management.

During the summer of 2019 I am growing, harvesting and preparing seeds from the larger *seeds for the end of the world* collection to be utilized for this participatory project. Along with the development of specialized seed packs that include tips, how-tos, and information about both hyperaccumulators and phytoremediation practices, each participant will take home seed packs to grow on their own. The workshop will invite a land reclamation scientist into the gallery to discuss bioremediation and phytoremediation strategies currently in practice within the region. A participatory action, inspired by the event scores of the FLUXUS movement, will extend responsibility for land reclamation on to participants, providing them the tools they need to reclaim toxic land in their own neighbourhoods and communities.

Cut a hole in a bag filled with seeds
 of any kind and place the bag where
 there is wind.¹⁴⁵

Another in-progress project, stemming from *seeds for the end of the world* expands on thinking through what it means for seeds to be crossing borders—both natural and political—as well as how these borders are shifting as the climate warms. Written for the upcoming publication, *Making (Eco)Logical: Locating the Arts in the Environmental Humanities in Canada* by editors Amanda White and Elysia French, the project reflects on temporal borders by extrapolating backward and forward to the geological era when earth last saw the CO₂ and temperature

¹⁴⁵ Yoko Ono, *Painting for the Wind*, 1961, event score, published in *Grapefruit* (New York: Simon and Shuster, 1971), unpaginated.

increases expected in the coming years due to the climate crisis. This new reflection on the project, *seeds for the end of the world from the past through to the future*, considers how we might begin to prepare now for changing ecosystems through seed development and propagation by imagining what we might expect from plant systems of the future.

Chapter Four [Part A]

The Inner Workings of Networks: Looking Closer to How Our Networks Are Designed (Part A: Technology)

I use the word ‘network’ to include us and our technologies in one vast system – to include human and nonhuman agency and understanding, knowing and unknowing, within the same agential soup.¹⁴⁶

While examples from activists and artists laid out in the previous chapter help to draw attention to ways that our networks might function anew (especially when made visible through the lens of disaster), this chapter dives deeper into how the networks we rely on currently operate. Our communities are increasingly shaped by online technology and I think that any solutions involving strategies to improve them needs to consider the ways in which we interact online. I return to Klein’s focus on white supremacy and the unequal distribution of the effects of climate change, especially in Black, Indigenous and communities of colour. Her work to draw threads between #BlackLivesMatter and the the larger systems within which we live, intuit a need to look to social media and how our contemporary problems (along with solutions to them) might spread. What configurations exist between human and non-human communities when we focus on ways online systems ground how we communicate and interact with one another? The patterns that exist within social media reflect greater society, and are thus pertinent to consider. James Bridle reflects on the role that technology plays and strategies for finding clarity within it: “The chasm is not between us and our technologies, but within the network itself, and it is through the network that we come to know it.”¹⁴⁷

¹⁴⁶ Bridle, *New Dark Age*, Chapter 1.

¹⁴⁷ Ibid.

Before we can wholly understand the impacts of social media, we need to first look at the role that technology plays in shaping overall culture. Again, Bridle helps to emphasize the need: “Over the last century, technological acceleration has transformed our planet, our societies, and ourselves, but it has failed to transform our understanding of these things.”¹⁴⁸ Bridle’s nod to the quick time frame technology has had to develop is critical to sit with for a moment. It is difficult to reflect on systems that have so quickly enveloped our everyday—systems that shape the very ways in which we act and how we think.¹⁴⁹ Bridle calls, not for new technology, but for new metaphors, a new language that can help describe a world “in which people, politics, culture and technology are utterly enmeshed,” and to help understand the complex system that technology has shaped.¹⁵⁰ John Durham Peters, in his *The Marvelous Clouds Toward a Philosophy of Elemental Media*, employs the complex new language Bridle advocates for when he re-situates *media*, “vehicles that carry and communicate meaning,” as vessels and environments: “containers of possibility that anchor our existence and make what we are doing possible.”¹⁵¹ Looking at media as both natural and cultural, Peters insists that media theory (and the language within, as pointed to by Bridle) needs to “take nature, the background to all possible meaning, seriously [...] The ozone layer, the arctic ice, and whale populations all are now what they are not only because of how they are covered by reporters, but because of how their being is altered by media, understood as infrastructures of data and control.”¹⁵²

¹⁴⁸ Ibid., Chapter 1.

¹⁴⁹ Ibid.

¹⁵⁰ Ibid.

¹⁵¹ John Durham Peters, *The Marvelous Clouds Toward a Philosophy of Elemental Media* (Chicago and London: University of Chicago Press, 2015), 2.

¹⁵² Ibid., 2.



Figure 12. Video still from *Notes to Self*, C. Battle, 2014 ongoing.

In his *Technopoly, The Surrender of Culture to Technology*, Neil Postman analyzes the critical role that technology plays in shaping a society. Postman notes the ideological bias that exists within the tools of technology, each with a “predisposition to construct the world as one thing rather than another, to value one thing over another, to amplify one sense or skill or attitude more loudly than another.”¹⁵³ He further points out the many institutions and organizations surrounding technologies that not only reflect the world views promoted by the technology itself but also work to actively ensure the realization of these world views.¹⁵⁴ Facebook, for example, is heavily invested in shaping a social in which Facebook is itself at the centre, where the prevalence of likes and shares is both pervasive and persistent. Postman defines a *technocracy* as a society where the tools of technology are privileged in the development of a culture’s world view, noting that within this system, everything gives way to the development of technology.¹⁵⁵ Technocracy quickly overtakes the social and symbolic orders of a culture: “Tools are not

¹⁵³ Neil Postman, *Technopoly: The Surrender of Culture to Technology* (Vintage Books, 1993), 13.

¹⁵⁴ Postman, *Technopoly: The Surrender of Culture to Technology*, 18.

¹⁵⁵ *Ibid.*, 28.

integrated into the culture, they attack the culture. They bid to *become* the culture.”¹⁵⁶ A step beyond technocracy is *technopoly* where a society’s aims shift to find all meaning within technology itself.¹⁵⁷ Technopoly is “the submission of all forms of cultural life to the sovereignty of technique and technology.”¹⁵⁸ For Postman, the tenets of technopoly are cemented within society when technology turns its sights on the privileging of information at all costs. Believing that what the world needs is more information, a technopoly neglects to reflect on the consequences of this goal: “We are a culture consuming itself with information, and many of us do not even wonder how to control the process. We proceed under the assumption that information is our friend, believing that cultures may suffer grievously from a lack of information which, of course, they do. It is only now beginning to be understood that cultures may also suffer grievously from information glut, information without meaning, information without control mechanisms.”¹⁵⁹ In a technopoly, information operates as a resource like any other, and in a capitalistic system it quickly becomes a resource to be commodified. From Bridle: “Our thirst for data, like our thirst for oil, is historically imperialist and colonialist, and tightly tied to capitalist networks of exploitation.”¹⁶⁰ One need only look to the underlying structure of social media as an example to map Postman’s technopoly across contemporary society. At the heart of it all is data. The information that Postman reminds us to be wary of has rapidly been commodified and turned into a tool of control—control of both power and capital.

We know that technology magnifies the bias already present within society, much has been written about this, and Bridle helps make it clear: “Data-driven regimes repeat the racist, sexist, and oppressive policies of their antecedents because these biases and attitudes have been encoded into them at the root.”¹⁶¹ More important to focus on here is the fact that the *way* in which technology reflects society is itself a biased process. Big data is dependent on

¹⁵⁶ Ibid., 28, 41.

¹⁵⁷ Ibid., 52.

¹⁵⁸ Ibid., 52.

¹⁵⁹ Ibid., 70.

¹⁶⁰ Bridle, *New Dark Age*, Chapter 10.

¹⁶¹ Ibid., Chapter 10.

interpretation at the same time that this interpretation is limited by its own algorithms.¹⁶² As Florian Cramer explains, “the limitations of the tool (and, ultimately, of using mathematics to process meaning) end up defining the limits of interpretation.”¹⁶³ The structure of data analysis is determined by its own interpretative framework: “the formal structure of any understanding and thus of hermeneutics—disappears into a nirvana of algorithmic computation, which is no longer intelligible to the human mind.”¹⁶⁴ This paradox itself quickly becomes reflected within a society driven by big data. Kate Crawford reflects on how this data-driven society, propelled by all-consuming and invasive surveillance, is taken up culturally through an analysis of the aesthetics of ‘normcore,’ the trend of embracing ‘normal’ (there is no normal) instead of ‘different’ that was made tangible by trend forecasting group ‘K-Hole’ in 2004.¹⁶⁵ “If the rule is Think Different, being seen as normal is the scariest thing.”¹⁶⁶

Normcore wants the freedom to be with anyone. You might not understand the rules of football, but you can still get a thrill from the roar of the crowd at the World Cup. In Normcore, one does not pretend to be above the indignity of belonging. Normcore moves away from a coolness that relies on difference to a post-authenticity coolness that opts in to sameness. But instead of appropriating an aestheticized version of the mainstream, it just cops to the situation at hand. To be truly Normcore, you need to understand that there’s no such thing as normal.¹⁶⁷

¹⁶² Florian Cramer, “Crapularity Hermeneutics: Interpretation as the Blind Spot of Analytics, Artificial Intelligence, and Other Algorithmic Producers of the Postapocalyptic Present,” in *Pattern Discrimination: In Search Of Media*, eds. Clemens Apprich, Wendy Hui Kyong Chun, Florian Cramer, and Hito Steyerl (University of Minnesota Press and meson press, 2018), 37.

¹⁶³ Cramer, “Crapularity Hermeneutics,” 37.

¹⁶⁴ Clemens Apprich, “Data Paranoia: How to Make Sense of Pattern Discrimination,” in *Pattern Discrimination: In Search Of Media*, eds. Clemens Apprich, Wendy Hui Kyong Chun, Florian Cramer, and Hito Steyerl, 101.

¹⁶⁵ Greg Fong, Sean Monahan, Emily Segal, Chris Sherron and Dena Yago, “Youth Mode: A Report On Freedom,” *K-HOLE*, October 2013, <http://khole.net/issues/youth-mode/>.

¹⁶⁶ K-HOLE, Youth Mode.

¹⁶⁷ Ibid.

While K-Hole’s trend forecast might sound freeing; encouraging that we all just get along and prioritize sameness, I find its insistence on blending-in troubling on a number of levels—especially when you step back to consider the uneven ways in which surveillance is applied to those populations on the margins (Black and Indigenous communities, for example). Crawford points out that its timing can’t be ignored: “Still, the rapid rise of the term ‘normcore’ is an indication of how the cultural idea of disappearing has become cool at the very historical moment when it has become almost impossible to do so because of big data and widespread surveillance. Blending in gives you a particular kind of power when standing out can have such serious consequences.”¹⁶⁸ Normcore helps to illustrate how the consequences of a technopoly are taken up on the cultural level.

The impacts of this data-driven system can further be seen in our seemingly unraveling social fabric which, following Postman, Bridle points out: “More information produces not more clarity, but more confusion.”¹⁶⁹ Bridle looks to online conspiracy theories as an example of moments when the paradox of data-driven systems becomes visible, likening paranoia to part of the feedback loop of network excess.¹⁷⁰ In essence, our inability to understand the complexity of the world leads us to needing more information which in turn “further clouds our understanding – revealing more and more complexity that must be accounted for by ever more byzantine theories of the world”¹⁷¹ The feedback loop isn’t sustainable and it is impacting the very fabric of our society in profound ways. The issue of contemporary paranoia is too complex to dive into completely in this document but I think the thread warrants a slight teasing apart as it is a driving force of our current social climate, and difficult to classify as anything but disaster. Continuing from Fredric Jameson’s analysis of paranoia within the postmodern narrative, Steyerl points to Edward Snowden’s 2013 NSA leak as a critical moment in the propelling of paranoia across [US] society, since it revealed that many of the theories that had up to then been considered

¹⁶⁸ Kate Crawford, “Squeaky Dolphin to Normcore: Anxiety in a Big-Data Era,” in *Public Servants: Art and the Crisis of the Common Good*, eds. Johanna Burton, Shannon Jackson and Dominic Willson (The MIT Press, 2016), 163.

¹⁶⁹ Bridle, *New Dark Age*, Chapter 8.

¹⁷⁰ *Ibid.*, Chapter 8.

¹⁷¹ *Ibid.*, Chapter 8.

conspirational, were in fact true (that the government was spying on everyday citizens, for example).¹⁷² Paranoia operates like a feedback loop, because, in order to recognize it we need to compare it to reality, and reality is continually being formed. Clemens Apprich further outlines the conundrum: “By the same token, we can never be sure whether the reality we live in isn’t delusional itself. There are no generalizable criteria to determine its veracity, because every time we try, we are thrown back to reality.”¹⁷³

Bridle helps elucidate other ways in which computer technology, built on mathematical principles, alter the foundations of society in ways that might not be immediately visible. He outlines the impacts of Moore’s law, a principle based on insights of the transistor—a semiconductor device and fundamental component of electronics. In 1965, Gordon Moore proposed that the number of “components per integrated circuit was doubling every year, and projected that this would continue for the next decade. In turn, this rapid increase in raw computing power would drive ever more wondrous applications.”¹⁷⁴ Although Moore’s forecast was indeed visible in the rate that computational power increased as the miniaturization of transistors were seen to double every two years, Bridle reminds us that Moore’s law isn’t in fact a law but rather, a projection.¹⁷⁵ “What began as an off-the-cuff observation became a leitmotif of the long twentieth century, attaining the aura of a physical law. But unlike physical laws, Moore’s law is deeply contingent: it is dependent not merely on manufacturing techniques but on discoveries in the physical sciences, and on the economic and social systems that sustain investment in, and markets for, its products. It is also dependent upon the desires of its consumers, who have come to prize the shiny things that become smaller and faster every year. Moore’s law is not merely technical or economic; it is libidinal.”¹⁷⁶

¹⁷² Steyerl, “A Sea of Data,” 3.

¹⁷³ Apprich, “Data Paranoia,” 110.

¹⁷⁴ Bridle, *New Dark Age*, Chapter 4.

¹⁷⁵ *Ibid.*, Chapter 4.

¹⁷⁶ *Ibid.*

The legacy of Moore’s law then, looks more like self-fulfilling prophecy: “as software centred itself within society, so its ever-rising power curve came to be associated with the idea of progress itself: a future of plenty for which no accommodations in the present need be made. A computing law become an economic law become a moral law – with its own accusations of bloat and decadence.”¹⁷⁷ The world we live in, profoundly influenced by ubiquitous computing, has itself been shaped not by law or principle, nor the complexity at the heart of the systems themselves, but by a reductive projection. This self-fulfilling prophecy continues as we permit the few big companies driving the internet to lead the way: “The so-called ‘Big Five’ of the internet do not only constitute the backbone of today’s platform capitalism but are also at the forefront of predicting our techno-cultural future.”¹⁷⁸

The underlying foundational principles of societies are built directly into the systems that operate within them. Bias, racism, prejudice, and the imbalance perpetuated by a colonial, necrocapitalist society are all reflected within our technology: “Because there has historically been very little diversity among the people who make computer systems, there are beliefs embedded in the design and concept of technological systems that we would be better off rethinking and revising.”¹⁷⁹ This reflection isn’t always visible while we’re using tech but increasingly, as our reliance on algorithms and artificial intelligence (AI) permeates our daily lives, these biases become glaringly problematic. Meredith Broussard looks at the foundations of AI technology and our reliance on it, offering a number of insights and solutions as to how things might be different. Continuing with Bridle’s scrutiny of Moore’s law and its role in shaping the current technological world, Broussard points out that essentially, a drive to apply “computer technology to every aspect of life has resulted in a tremendous amount of poorly designed technology.”¹⁸⁰

¹⁷⁷ Ibid.

¹⁷⁸ The “Big Five” refers to Apple, Alphabet (the parent company of Google), Microsoft, Facebook and Amazon. In a 2017 report, the big five had “a combined valuation of over \$3.3 trillion, and [made] up more than 40 percent of the value of the Nasdaq 100 index. Conor Sen, “The ‘Big Five’ Could Destroy the Tech Ecosystem,” *Bloomberg*, November 15, 2017. <https://www.bloomberg.com/opinion/articles/2017-11-15/the-big-five-could-destroy-the-tech-ecosystem>; Clemens, “Data Paranoia,” 112.

¹⁷⁹ Meredith Broussard, *Artificial Unintelligence: How Computers Misunderstand the World* (MIT Press, 2018. Kindle edition), Chapter 6.

¹⁸⁰ Broussard, *Artificial Unintelligence*, Chapter 1.

She warns that our reliance on such technology to solve social problems will inevitably fail, and that by doing so we “tend to make a set of the same predictable mistakes that impede progress and reinforce inequality.”¹⁸¹

By looking closely at technology, Broussard names what sits at the heart of the problem *technochauvinism*, “the belief that tech is always the solution.”¹⁸² The danger we find ourselves facing is an over reliance on technology that puts data ahead of all else, that continuously harvests information and then analyzes it without considering the inherent bias at work in the very tools performing the analysis. We ignore the fact that “data is socially constructed,”¹⁸³ and as a result, we set ourselves on a path toward what can only end in disaster.

It is important to look at *which* people have created the collection systems and what perspectives and bias they have ingrained into the technologies themselves. Broussard sheds light on the history of Western mathematics, physics and other sciences instrumental in the development of the computer technology so prevalent in our society today. We know the fields have been far from welcoming to women and people of colour, they make feel-good movies about this now, but Broussard goes deeper into the foundations of the disciplines, pointing out that: “When faced with the option of bringing more, different people into the workforce, nineteenth-century mathematicians and engineers chose instead to build machines that replaced people—at enormous profit.”¹⁸⁴ How could we expect anything different from the tools that have been created by such a mindset? For Broussard there is a simple solution: “In order to create a more just technological world, we need more diverse voices at the table when we create technology.”¹⁸⁵

¹⁸¹ Ibid.

¹⁸² Ibid.

¹⁸³ Ibid., Chapter 2.

¹⁸⁴ One recent example is Theodore Melfi’s 2016 *Hidden Figures*, based on Margot Lee Shetterly’s book of the same title which tells the story of the Black female mathematicians who worked at NASA during the Cold War; Broussard, *Artificial Unintelligence*, Chapter 6.

¹⁸⁵ Broussard, *Artificial Unintelligence*, Chapter 7.

The way in which our technology is designed is the “small c” catastrophe Antonio Y. Vazquez-Arroyo writes about. The structural frameworks fundamental to our technology—from the influence of Moore’s law on the shift to technopoly; to the human bias at the core of how software is developed—create the conditions where “big C” catastrophes become inevitable. “We shouldn’t rush to be governed by computational systems designed by people who don’t care about or understand the cultural systems in which we are all embedded.”¹⁸⁶

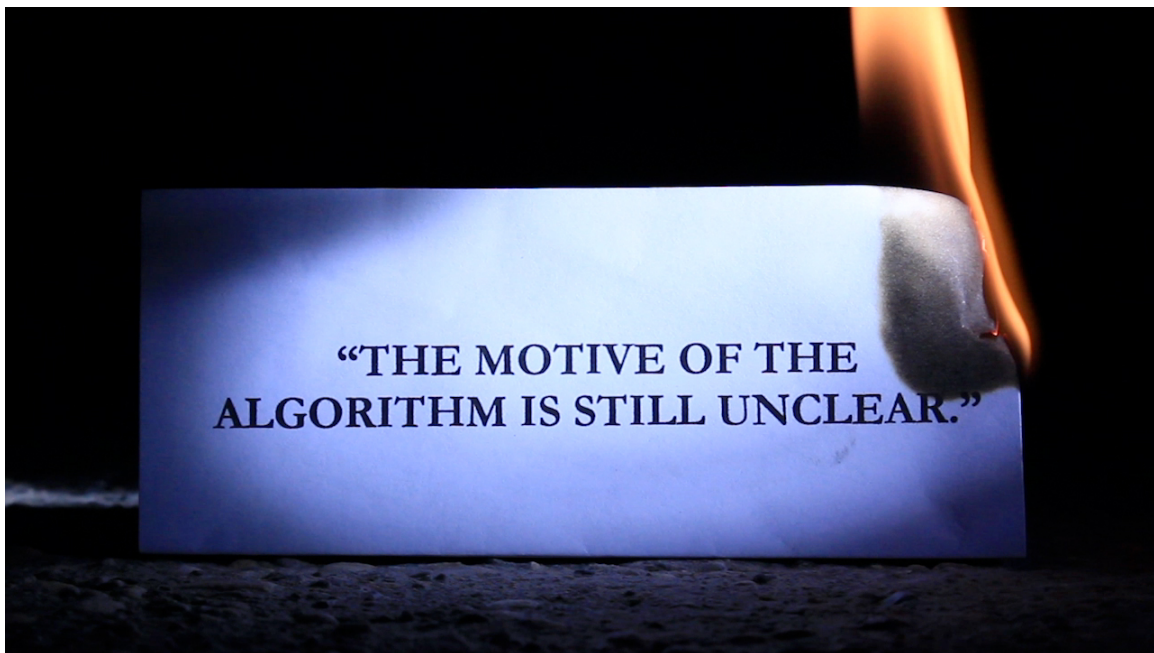


Figure 13. Video still from *Notes to Self*, C. Battle, 2014 ongoing.

Steyerl looks to what she refers to as ‘disruptive innovation.’ Such innovations are designated by technologies such as: artificial intelligence, automation, machine learning and cybernetic control systems, which, Steyerl concludes, are “violently shaking up existing societies, markets, and

¹⁸⁶ Ibid., Chapter 6.

technologies.”¹⁸⁷ Steyerl notes that those in power thrive on the “permanent breakdown, dysfunctions, and so-called ‘predictive’ capacities creating havoc”¹⁸⁸ which are the result of these technologies. She also presents the beginnings of a potential solution to the disaster shaped by disruptive innovations: “Not centralized competition but cooperative autonomy. Not fragmenting time and dividing people, but reducing expansion, inflation, consumption, debt, disruption, occupation, and death. Not superhumanity; humanity as such would perfectly do.”¹⁸⁹ Similar ideas are put forth by a number of writers who, as they envision the future, emphasize the need to acknowledge the structures we find ourselves within when trying to find new ways forward. Beth Coleman’s work on virtual realities and the links between the virtual and the real emphasize similar strategies while at the same time calling for an embrace of technology as a potential solution. Her work presents the inherent nature of the social in online technologies as empowering, and as a tool to bring the rise of the social back to the real world.

Coleman asks how we might imagine modes of agency within a world controlled by pervasive technology.¹⁹⁰ In *Hello Avatar*, Coleman introduces the concept of X-Reality, the continuum between on and offline environments: “we have already deeply incorporated network society into our lives and the important change to understand is the continuum between online and off, i.e., the ‘X-Reality’ that traverses the virtual and the real.”¹⁹¹ Using mediated communication technologies like Skype, Google Talk and Face Time as examples, Coleman asserts that networked media simulate presence.¹⁹² That is, online environments actually can help us take on agency, and the social structures of the online world can help us move toward stronger social connections in real life.

¹⁸⁷ Hito Steyerl, *Duty Free Art: Art in the Age of Planetary Civil War* (Verso Books, 2017. Kindle edition), Chapter 2.

¹⁸⁸ *Ibid.*, Chapter 2.

¹⁸⁹ *Ibid.*, Chapter 2.

¹⁹⁰ Beth Coleman, “Everything is Animated: Pervasive Media and the Networked Subject,” *Body & Society*, 18(1) (2012), 79.

¹⁹¹ Beth Coleman, *Hello Avatar* (MIT Press, 2011), 3.

¹⁹² Coleman, *Hello Avatar*, 36.

I suggest that this reassertion of the social in real life can also be found within the framework of disaster. Many of the systems at work in our society are invisible to us despite their profound impact on our daily lives and only made visible in times of crisis, thus my interest in looking to disaster for potential solutions. I see disaster, how and when it occurs, as well as how we approach and survive it, as a generative place to find solutions to the hazards we encounter in society prior to them becoming disastrous. Through careful consideration, we might follow the example provided by Tsing through her study of the matsutake mushroom and frame them as disturbances instead, more akin to *change* with the potential to help realign. In Part B of this chapter, I continue to tease apart our relationship to technology, looking specifically to the Internet and social media in search of new patterns that might provide useful strategy for realizing this reframing.

I don't believe our species can survive unless we fix this. We cannot have a society in which, if two people wish to communicate, the only way that can happen is if it's financed by a third person who wishes to manipulate them.¹⁹³

¹⁹³ Jaron Lanier, "How we need to remake the internet," in *Ted2018*, April 2018, https://www.ted.com/talks/jaron_lanier_how_we_need_to_remake_the_internet.

Chapter Four [Part B]

The Inner Workings of Networks: Looking Closer to How Our Networks Are Designed (Part B: The Internet, Social Media and Community)

Lev Manovich reminds us that the very software that has come to dominate our social, political and cultural experiences is continually updated and reworked.¹⁹⁴ In line with Manovich's claim, I see the perpetual status of 'beta' in the technology we utilize, especially that of social media, as facilitating a continued state of social and cultural unrest, and in turn as having the potential to generate tactics for disruption. The constant state of testing and adaptation found within the status of beta encourages tactics of experimentation, of trying multiple techniques and solutions, of rapid response and redirection of ideas. In *Software Takes Command*, Manovich discusses the importance of looking closer to the software that shapes our every day and notes that, if we are to understand contemporary society—from issues of control and representation, to memory and vision—we need to better analyze these tools.¹⁹⁵

We connect to the cloud; we work in it; we store and retrieve stuff from it; we think through it. We pay for it and only notice it when it breaks. It is something we experience all the time without really understanding what it is or how it works.¹⁹⁶

Recognizing the back and forth that occurs between the virtual and real life, Daniel Trottier writes about social media as a kind of space, referring to it as more like a dwelling characterized by social convergence.¹⁹⁷ But this space is engineered to foster particular kinds of social cohesion that benefit those who construct and own it, often with the sole goal of exploiting those

¹⁹⁴ Lev Manovich, *Software Takes Command* (Bloomsbury Academic, 2013), 1.

¹⁹⁵ *Ibid.*, 15.

¹⁹⁶ Bridle, *New Dark Age*, Chapter 1.

¹⁹⁷ Daniel Trottier, *Social Media as Surveillance: Rethinking Visibility in a Converging World* (Routledge, 2012), 1.

who dwell within it for the primary resource it mines: personal data.¹⁹⁸ Trottier points out that the structures of these dwellings don't stay within the virtual and instead creep, primarily through tactics of surveillance, into the physical world where their strategies of exploitation become normalized and accepted.¹⁹⁹

In order to fully grasp the structure and in turn impacts of social media, I first want to understand the ways in which computer technology is made, that is, how it is written: “although on the surface program code appears to operate in a similar sovereign manner with straightforward agency, namely a command to execute an instruction from sovereign code, [...] in significant ways these operations are also prone to bugs and failure, and in significant ways can be considered to be out of control, like speech.”²⁰⁰ Like speech, then, we need to consider where code is coming from: “the broader apparatus including the idiosyncrasies of the programmer provide indeterminate outcomes and help to stress the expressive dimension of software production as a whole.”²⁰¹

The individual voices developing code create the backbone of the internet that we so pervasively exist within but we also need to consider the larger structure of the internet itself and how it imposes upon and takes up those individual voices to create the larger whole. Following Geoff Cox: “Indeed, if code speaks, under what conditions and on behalf of whom?”²⁰² In *After the Internet*, Ramesh Srinivasan, and Adam Fish look to the internet and other new media technology as “part of an assemblage that brings together *offline networks and spaces* [...] These assemblages reveal that the internet and new media technology cannot be separated from the

¹⁹⁸ Trottier, *Social Media as Surveillance*, 7.

¹⁹⁹ Ibid., 17.

²⁰⁰ Geoff Cox and Alex McLean, *Speaking Code: Coding as Aesthetic and Political Expression* (The MIT Press, 2012), 6.

²⁰¹ Cox and McLean, *Speaking Code*, 6.

²⁰² Ibid., 10.

belief systems, knowledges, and local geographies, politics, and economics of community life. Instead, they are interconnected as assemblages.”²⁰³

Decentralized by design, the internet (as it exists now) consists of a series of hubs with not one single point exercising control over all others.²⁰⁴ Its commodification however, has shifted the distributed structure inherent to the decentralized system. Further altered by trolls, bots and fake accounts, which influence and detract while profiting from any sort of engagement, the sense that we might have had of social media being the ‘voice of the people’ weakens.²⁰⁵

Writing about the role that the internet plays in disaster prone Jakarta, Nashin Mahtani asserts that the city’s high concentration of mobile devices have not only changed participation in city life but “by broadcasting deep into biological systems, have also fundamentally rewired the neural circuitries through which human inhabitants perceive and experience them.”²⁰⁶ Following Manovich, Mahtani points out that the technology has restructured our cognitive processes, primarily those of attention, memory, and perception, resulting in a sense of dislocation where we move through “virtual spaces seemingly instantaneously while perpetually feeding neural circuitries with torrential streams of intimately curated data.”²⁰⁷ Similarly, Bridle looks to the physical infrastructure enabling our overwhelming reliance on internet technology: the fibre-optic cables running underground and the “cable landing sites where the internet comes ashore from undersea data links.”²⁰⁸ All of which, he points out, “[are] parasitic upon structures that were not designed for their contemporary uses, nor for the effects of climate change: mobile phone masts grafted onto church steeples, data centres in old industrial units, telephone

²⁰³ Ramesh Srinivasan and Adam Fish, *After the Internet* (Polity, 2017), 27 & 74. (italics in original).

²⁰⁴ Alexander Galloway, *Protocol: How Control Exists After Decentralization* (Cambridge: MIT Press, 2006), 31.

²⁰⁵ Trolls, bots and fake accounts are often deployed as strategy to increase profits, since, on social media, more engagement (likes, retweets, etc) results in increased revenue via advertising.

²⁰⁶ Nashin Mahtani, “Post-Internet Cities - Impressions of Disaster,” in *eFlux Journal*, August 2017, <http://www.e-flux.com/architecture/post-internet-cities/140716/impressions-of-disaster/>.

²⁰⁷ Mahtani, *Post-Internet Cities*.

²⁰⁸ Bridle, *New Dark Ages*, Chapter 3.

exchanges constructed in Victorian post offices.”²⁰⁹ The tools we have come to rely on so entirely in order to communicate with one another, in order to share and even warn one another about our most pressing issues, have the potential for disaster built into their very structures. Our strategies for alerting one another about disaster have the potential to fuel and exacerbate the impacts of disaster. What does it mean for the tools we rely on to warn us of crises resulting from the effects of global warming to themselves be at risk of failure due to climate change?

Srinivasan, and Fish reimagine the internet from the perspective of activists and citizens on the fringes. Recognizing that the internet “cannot be treated independently of cultural, social, and political practices,” the two recognize that the internet as we know it now, is not “the democracy-producing dream technology that it was perhaps imagined to be in its early days.”²¹⁰ Owned and operated by corporations working on behalf of the elite members of society and governments, the tools of the internet are “increasingly used as instruments of surveillance, propaganda, and fake news.”²¹¹ In essence, the commodification of the internet is the ‘small c’ catastrophe that we are now seeing lead to ‘big C’ Catastrophic results.²¹² Srinivasan and Fish warn about the risks of universalizing the myths of the internet as a force to unite and connect, especially as it can dismiss the “critical inquiry necessary to support grassroots democratic and activist objectives.”²¹³ I think it is also important to recognize here the role that the internet, especially social media, have played not only in the shaping of our social systems and communities, but in contributing to our ability to tease out and make these very cultural realities more visible.

The Arab Spring, when millions gathered on the streets of Tunisia and Egypt to demand change in 2011, is often cited as an example of the power that social media holds as a tool for change. Jon B. Alterman, noting that it was mainstream media reporting on the protests as facilitated

²⁰⁹ Ibid., Chapter 3.

²¹⁰ Srinivasan and Fish, *After the Internet*, 3 & 11.

²¹¹ Groys, *Towards a New Universalism*.

²¹² Here we might think about the ongoing investigation into the role that social media played in the shaping, perhaps even nefariously, of the 2016 US Presidential election.

²¹³ Srinivasan and Fish. *After the Internet*, 13.

through social media that served a more instrumental role, points out that where social media have been uniquely effective is in the way “they allowed a large number of people to see themselves as activists because they were creating content.”²¹⁴ Social media helps build individual ties to other activists and lowers “the threshold to become an activist, making it easier for people to see themselves as activists.”²¹⁵ It allows for a sense of participation that traditional media doesn’t, it makes us *feel* like we are a part of something bigger than ourselves, and through social media, we are.

This level of participation though, is one that is heavily compromised: “The proliferation of privatized social networking and current developments in service-based platforms (what has become known as “cloud computing”) provide pertinent examples of such compromises, and carry profound consequences.”²¹⁶ Cox also points out that even the sense of publicness is deeply flawed across social media “inasmuch as they rely on privately owned platforms.”²¹⁷

Teens become Internet famous then immediately delete their accounts. The flood of notifications is overwhelming. It feels like spam. But there were probably some genuine, interesting interactions buried in the feed. Maybe they reactivate their accounts for a second and begin to dig, and then immediately shut them down again. It’s a delicate balance between FOMO and DGAF. How do you navigate the two?²¹⁸

When writing about the protocols of the internet, Alexander Galloway notes that although the inherent structure of the internet defies the authoritarian necessity of capitalism, it is clear that the economic system has already reshaped the ideals of decentralized networks in ways that are

²¹⁴ Jon B Alterman, “The Revolution Will Not Be Tweeted,” *The Washington Quarterly*, 34:4 (2011), 2.

²¹⁵ Alterman, *The Revolution Will Not Be Tweeted*, 10.

²¹⁶ Cox and McLean, *Speaking Code*, 72.

²¹⁷ Ibid.

²¹⁸ K-HOLE, Youth Mode.

far reaching. He goes further, advocating for strategies of resistance based on the decentralized structure of the internet itself. In essence, he calls for approaches that look closely at the protocological nature of networks, pulling from their distributed nature in the development of tactics against those who want to control it.²¹⁹ First looking to how these networks are structured, Galloway reminds that online networks need to be understood “not as metaphors, but as materialized and materializing media, [as] an important step toward diversifying and complexifying our understanding of power relationships in control societies.”²²⁰ The simplest network is a centralized one, a hierarchical structure where each branch of the hierarchy is subordinate to the centre and where all activity travels from centre to periphery.²²¹ Decentralized networks, on the other hand, define the structure that much of our modern online systems have been based on, and operate primarily at the local level in turn effecting the global. The Domain Name System (DNS), the way in which sites on the internet are named and connected to one another, essentially the fundamental organizational system of the internet, is a hierarchical system based on the decentralized model. Each computer is assigned a unique Internet Protocol Address (IP) which allows it to communicate across a given network. At the top of the hierarchical model, through a process called resolution, domain names are converted to IP addresses by “a handful of so-called ‘root’ servers holding ultimate control and delegating lesser control to lower branches in the hierarchy. There are over a dozen root servers located around the world.”²²² Galloway explains the process for accessing the website ‘www.rhizome.org’:

First, the root server receives a request from the user and directs the user to another machine that has authority over the ‘org’ domain, which in turn directs the user to another machine that has authority over the ‘rhizome’ subsection, which in turn returns the IP address for the specific machine known as www. [...] Only the computer at the end of the branch knows about its immediate neighbourhood, and thus it is the only machine with authoritative DNS information. [...] Because the DNS system is structured like an

²¹⁹ Galloway, *Protocol: How Control Exists After Decentralization*, 151.

²²⁰ *Ibid.*, xv.

²²¹ *Ibid.*, 30.

²²² *Ibid.*, 9.

inverted tree, each branch of the tree holds absolute control over everything below it.²²³

The system, although decentralized, still contains elements of the centralized model due to this hierarchical control and in fact creates a weakness in the overall system: “The inventor of the World Wide Web, Tim Berners-Lee, describes the DNS system as the ‘one centralized Achilles’ heel by which [the Web] can all be brought down or controlled.’”²²⁴

Our contemporary network model has started to shift from the decentralized system to one that is overwhelmingly *distributed* as can be seen by the rise in cloud computing. The distributed network has no central hub, “instead each entity in the distributed network is an autonomous agent.”²²⁵ From Galloway:

Each point in a distributed network is neither a central hub nor a satellite node – there are neither trunks nor leaves. The network contains nothing but “intelligent end-point systems that are self-deterministic, allowing each end-point system to communicate with any host it chooses.” Like the rhizome, each node in a distributed network may establish direct communication with another node.²²⁶

Galloway sees distributed networks as indicative of larger shifts in our social lives, shifts that deprive central bureaucracies in favour of a broader network of autonomous social actors.²²⁷

²²³ Ibid., 9.

²²⁴ Tim Berners-Lee, *Weaving the Web* (New York: HarperCollins, 1999), quoted in Galloway, Alexander, *Protocol: How Control Exists After Decentralization* (Cambridge: MIT Press, 2006), 10.

²²⁵ Galloway, *Protocol*, 33.

²²⁶ Ibid., 11.

²²⁷ Ibid., 32.

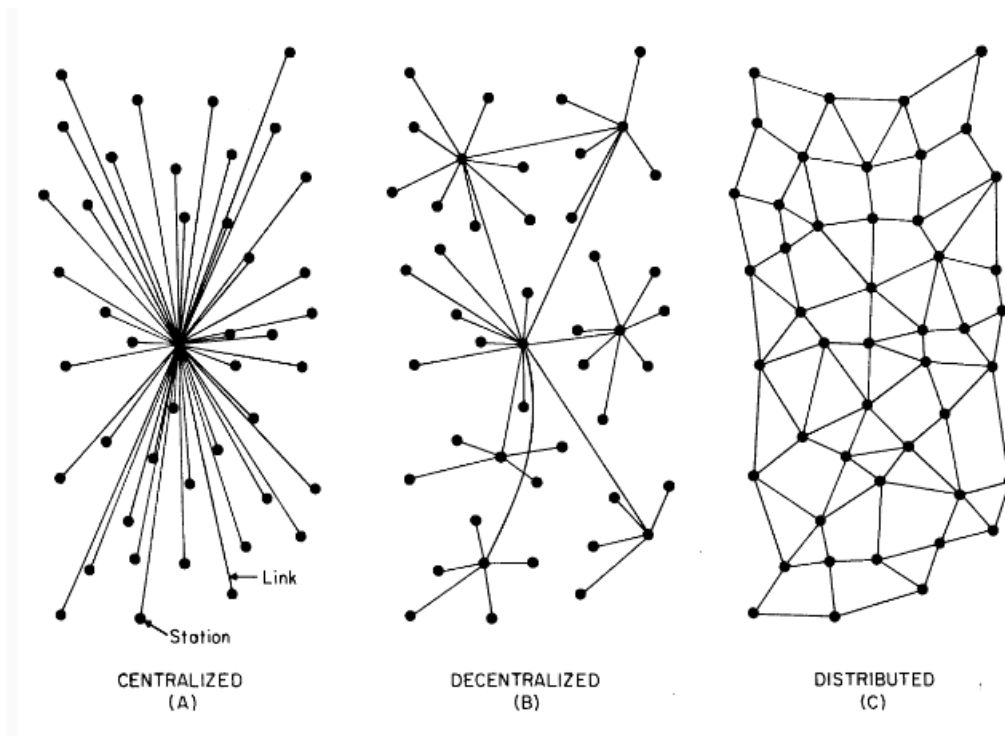


Figure 14. Centralized, Decentralized and Distributed networks, from *On Distributed Communications, prepared for the United States Air Force Project Rand (The Rand Corporation)* by Paul Baran, 1964.

A distributed computer network promises an autonomous model with each user connected and supporting the next. The model purports to mirror that of plant systems, even the language at the core of computer networks pulls from ecological systems: web, root, rhizome, trunks, leaves. But the metaphor falls short when one considers the impacts that other human-based systems—capitalism, colonialism, white supremacy—have on the overall networks construction. I wonder how, as we develop communities, we might pull from the structures of these networks to find tactics that function in concert with thinking about the framework of disaster.

Analyzing the inner workings of complex networks, network science has seen a rise in attention and Wendy Hui Kyong Chun provides a reminder of the dangers inherent to looking at computer networks, as they exist now, as potential solutions for the future. She utilizes the term

‘homophily’ or, ‘love as love of the same’ to describe how networks perpetuate segregation.²²⁸ Since the networks that we utilize online impact the ways we relate in person, “becom[ing] self-fulfilling prophecies,”²²⁹ Chun points out the need to be critical of how it is that we consider networks, especially since they “do not simply enact what they describe, their most basic units—nodes and ties—are also themselves the consequence of performative, habitual actions.”²³⁰ She points to the fact that network science is itself responding to increased global connectivity and capitalism, utilizing a logic that is permeated by market-based thinking.²³¹ Chun remains critical of how the discipline reduces the complexity of the real world into a simplified map as a way to expose patterns: “This mapping depends on dramatic simplifications of real world phenomena. In fact, these ‘discovered’ relations are vast simplifications of vast simplifications, with each phase of network theory—initial abstraction/representation followed by mathematical modeling—producing its own type of abstraction.”²³² This simplification of the local in order to discover the global is a flaw that perpetuates injustices and inequalities at the very heart of the system creating it, and as the goal of this written document is to try to get at new patterns and new solutions for working within community in ways that combat racism, discrimination, inequality and injustice, I take Chun’s critique of looking to networks for solutions to heart. Network science “presumes consensus and similarity within local clusters, making segregation a default characteristic of network neighborhoods,”²³³ and if networks repeat and mirror the very systems they are generated within, we need new methods for finding solutions outside of them. Chun clarifies: “[N]etwork science, as currently formulated, is the science of neoliberalism. To be clear, this is not to blame network science for neoliberalism—or to claim that network scientists are inherently neoliberal—but to highlight the fact that the many insights network science currently produce are deeply intertwined with the neoliberal system they presuppose.”²³⁴ Chun goes on: “Neoliberalism, as Wendy Brown has argued, is based on inequality and

²²⁸ Wendy Hui Kyong Chun, “Queering Homophily,” in *Pattern Discrimination: In Search Of Media*, eds. Clemens Apprich, Wendy Hui Kyong Chun, Florian Cramer, and Hito Steyerl (University of Minnesota Press and meson press, 2018), 62.

²²⁹ Chun, “Queering Homophily,” 66.

²³⁰ *Ibid.*, 67.

²³¹ *Ibid.*, 69 and 72.

²³² *Ibid.*, 70.

²³³ *Ibid.*, 76.

²³⁴ *Ibid.*, 74.

‘financialized human capital.’ ‘When we are figured as human capital in all that we do and in every venue,’ she reveals, ‘equality ceases to be our presumed natural relation with one another.’”²³⁵ Chun provides strategies for looking forward: “The future lies in the new patterns we can create together, new forms of relation that include liveable forms of indifference. The future lies in unusual collaborations that both respect and challenge methods and insights, across disciplines and institutions.”²³⁶

If online networks are at once reflective of and helping to structure our current society, while also offering potentially new ways of thinking about that very society, how might we gain insight into new patterns in and from online networks that will help us create a progressive future together? In *Tubes: A Journey to the Center of the Internet*, Andrew Blum explores the physical infrastructure of the network itself in an attempt to better understand how it works: “There’s a certain amount of vulnerability involved with being a network on the Internet. When two networks connect, they have to trust each other – which also means trusting everyone the other one trusts.”²³⁷ Blum’s reminder of how it is that networks fundamentally rely on each other brings me back to thinking about how it is that supportive communities tend to treat one another.

As an artist, my approach is to consider how this knowledge might be utilized on the ground and this necessitates finding working examples. I’d like to consider how communities have developed intentionally in the past; gathering a like-minded group and moving outside centre in order to build a new society on the fringes of the dominant one they have chosen to turn their backs on. By surrounding themselves with others like them, they better ensure the network of trust that Blum describes. But I take insight from Chun’s warnings about homophily and am wholly untrusting of the desire to surround myself solely by others who think like me. I

²³⁵ Wendy Brown, *Undoing the Demos: Neoliberalism’s Stealth Revolution* (Cambridge, Mass: MIT Press, 2015). Quoted in Wendy Hui Kyong Chun, *Queering Homophily* (London, New York: University of Minnesota Press & Meson Press, 2018), in *Search of Media*, eds. Clemens Apprich, Wendy Hui Kyong Chun, Florian Cramer, and Hito Steyerl, 59-98 (London, New York: University of Minnesota Press and meson press, 2018), 74.

²³⁶ Chun, “Queering Homophily,” 90.

²³⁷ Andrew Blum, *Tubes A Journey to the Center of the Internet* (Toronto: HarperCollins Publishers Ltd., 2012), 31.

understand the urge. Especially now, when much of contemporary society feels so clearly broken, moving backward from the slow trickle of progress made across recent years.

From Chun's warnings, I'd like to step back for a moment to consider the circumstances under which this document has been generated. It is important to me that her warnings about who we build communities with and the strategies we utilize to do so are discussed in ways that make room for the personal. After all, communities and publics affect us deeply on an intimate level and I find it imperative to remain cognizant of the personal while thinking through the theoretical. Through this balance we might find hands on approaches and working solutions. Written while residing in two very different places: first in London, Ontario which has a longstanding Indigenous presence including the Anishinaabe, Haudenosaunee, and Lenape peoples; and later in Edmonton, Alberta, Treaty 6 territory, ancestral and traditional territory of the Plains and Woods Cree, Dene, Blackfoot, Saulteaux, Nakota Sioux, and Métis peoples. Just yesterday [April 16, 2019] the province of Alberta, where I am currently writing this from, elected a Premier who ran on a campaign directly targeting LGBT2Q+ students, and whose party backed at least 5 MPs explicitly championing white supremacist views. The same day, the province of Ontario where I had been previously writing, and where many have been struggling with the repercussions of electing a conservative Premier last spring, announced that they will cut 50% of public library budgets—a clear statement on their intent to deprivilege education and institutions dedicated to maintaining the social fabric, especially of lower income citizens who rely on the resource for basic services. This was just one day. I'm sure there will be many more troubling events and news in the days to come before this document is completed. These days are scary. And perhaps most disturbing to me, is that many of my neighbours—my fellow citizens—voted *in favour* of parties instituting these uncaring policies that will so clearly further the harm that the neoliberal system already perpetuates, especially against citizens already at risk, with its roots in racism, bigotry and oppression. I understand the desire to separate oneself from those who would do so, and the drive to move to the middle of nowhere and start fresh with others who think similarly to how I do. I don't want to be in a community with people who would support any of this either. For some of us, it might in fact be the safest thing to do. But at what cost? What does it mean to only engage with those who think similarly to you? Such a mentality is a

slippery slope to only engaging with those who look like you or sound like you or make as much money as you, and then we're back to reinforcing the same priorities that caused this disaster in the first place. We already know the associated risks in online communities, where we are continually warned of the echo chambers that develop through only following those with similar points of view. I'd like to pull at this thread further in order to tease out potential solutions.

Looking to the commons as a way to “rethink the tensions between private ownership, public governance and everyday resident use of city space,”²³⁸ Nathalie Casemajor Loustau and Heather Davis offer unique insight. Considering the existing models in western society, they note that “our political imaginary seems to be completely impoverished by the dominance of either socialism or capitalism.”²³⁹ Looking to the commons as utopic in the way that it holds possibility of thinking differently about social organization, the two reframe the goals as far as how we might consider utopia itself: “utopia could be understood, following Henri Lefebvre, as ‘an illuminating virtuality,’ where it remains necessarily incomplete. [...] Lefebvre developed a vision of utopia as a creative potentiality, a movement, not an achievement, that enables the transformation of everyday life through urbanity.”²⁴⁰ That is, perhaps it is our expectation of the end goal that needs to shift—instead of focusing on the final outcome, we need to think about change as an ongoing and continual process with unexpected potential. Failure as methodological strategy can help assuage the process, considering the ways in which we develop and foster community has the potential for new ways forward. Imagining how our city's might facilitate engagement, how they might mitigate disaster and rethink how we approach both local and broader communities has the power to help new strategies manifest in the future.

An article that recently gained traction online championed new designs for the world's first sustainable floating city, built with the explicit purpose of responding to urban displacement due

²³⁸ Nathalie Casemajor Loustau and Heather Davis, “FCJ-143 Ouvert/Open: Common Utopias,” in *The Fibreculture Journal* 20, (2012), 123.

²³⁹ Loustau and Davis, “FCJ-143 Ouvert/Open,” 128.

²⁴⁰ *Ibid.*, 130.

to climate change with the ability to withstand natural disaster: “Floating cities will be located specifically in sites where they will have sufficient water depth to not be impacted by tsunamis,” and to withstand floods and hurricanes.²⁴¹ The cities, consisting of a group of hexagon platforms anchored to the seabed, pull from a small commune like model—with each hexagonal island only capable of supporting 300 citizens, capping each conglomerate city with a maximum of 10,000 individuals.²⁴² This new approach to considering the structure of a future city offers more than just a solution to the natural disasters we will certainly face due to the climate crisis. I see the potential in this model for tackling both Chun’s warnings about homophily and the alternative ways of organizing the social that Loustau and Davis write about. Perhaps this model of embracing the local into the very architecture of a city has practical implications in the future—both environmentally and politically. If one of my goals is to consider strategies for how disaster might be utilized to enhance and even help societies progress from an ecological framework, maybe focusing on the local makes sense. Ecology, after all, looks primarily to interactions in our immediate environment.

Writing about the climate crisis in *Down to Earth: Politics in the New Climatic Regime*, Bruno Latour points toward solutions by looking back to what got us in this position in the first place: “The absence of a common world we can share is driving us crazy.”²⁴³ Essentially, Latour concludes that we are stuck in a world where two opposing worldviews dominate and neither—one that prioritizes the global, the other the local—are sufficient. Neither on their own will help to remediate the future and the pull between the two opposing poles is making us crazy. The dominant modern approach—globalization—is shaped by those who see the earth as separate from us, and look outward at the relationship of the earth to the cosmos, those who “simply do not see that the earth system reacts to human action, or do not believe it possible.”²⁴⁴ This view has led to out-of-this-world thinking, what Latour refers to as ‘global-minus.’ Our Earth isn’t

²⁴¹ George Wright. “Floating cities - fantasy or the future?” *BBC News*, 7 April 2019, <https://www.bbc.com/news/world-47827136>.

²⁴² Ibid.

²⁴³ Bruno Latour, *Down to Earth: Politics in the New Climatic Regime*, trans. Catherine Porter (Polity Press, 2018), 2.

²⁴⁴ Latour, *Down to Earth*, 77.

capable of containing the modern ideal of progress and development—it never was, and in order to usher in the modernization that has shaped this worldview, we had to abandon the local.²⁴⁵

Latour points out that although the local seems the counter-reaction to rise once the global has failed, it is no longer the same local that we left behind: “the planet is much too narrow and limited for the globe of globalization; at the same time, it is too big, infinitely too large, too active, too complex, to remain within the narrow and limited borders of any locality whatsoever.”²⁴⁶ Instead, he devises a new concept, a third alternative, naming it the ‘Terrestrial.’ In contrast to the local which closes itself off, the Terrestrial is designed to open itself up: “For the Terrestrial is bound to the earth and to land, but it is also a way of worlding, in that it aligns with no borders, transcends all identities.”²⁴⁷ The Terrestrial holds the perspective of the up close and with it comes a new set of patterns that we need to learn to recognize.²⁴⁸ For the model of the floating city to be viable within the framework of Latour’s Terrestrial then, it must also rethink its approach to the local as one that is not solely architecturally driven. It isn’t enough to develop future cities in response to the climate crisis alone, but to also consider how the very structures that contributed to it have been upheld.

How could we deem ‘realistic’ a project of modernization that has ‘forgotten’ for two centuries to anticipate the reactions of the terraqueous globe to human actions? [...] How could we accept as ‘objective’ economic theories that are incapable of integrating into their calculations the scarcity of resources whose exhaustion it had been their mission to predict? How could we speak of ‘effectiveness’ with respect to technological systems that have not managed to integrate into their design a way to last more than a few decades?²⁴⁹

²⁴⁵ Ibid., 16 & 26.

²⁴⁶ Ibid., 16.

²⁴⁷ Ibid., 54.

²⁴⁸ Ibid., 67 & 56.

²⁴⁹ Ibid., 66.

Latour's analysis of our assumptions of what is 'realistic' points toward the inherent failure at play. And this failure too can be extended to my own overall project. Within artistic discourse, failure helps us to understand that—in order to get at something different—we first need to try, and then to fail, and then to try again. We need to remain cognizant of the inherent failure in all of this in order to tackle and perhaps even overcome it. Through this cognizance of failure, artistic practice enables us to imagine the future differently and to imagine how other strategies might become reality.²⁵⁰ We need new patterns, and a willingness to fail allows for a consideration of how these patterns, and in turn networks, might be different.

As Bridle points out, the infrastructure that allows our technology to function is itself at great risk of the threat of climate change and the rise in global temperatures that have already begun: "Below the ground, fibre-optic cables run through sewage channels that are becoming incapable of handling increased storm surges and flooding; cable landing sites, where the internet comes ashore from undersea data links, are susceptible to rising sea levels, which will be particularly destructive in southeast and eastern England, sites of crucial connections to the continent. Coastal installations will be increasingly susceptible to saline corrosion, while towers and transmission masts will buckle and fall as the ground, attacked by drought and flood, shears and subsides."²⁵¹ A number of the patterns that we have tracked and studied for centuries, that we rely on in order to plan for the future: "long-term weather trends, fish spawning and migration, plant pollination, monsoon and tide cycles, the occurrence of 'extreme' weather events,"²⁵² have already begun to succumb to climate change. We need new patterns—we've contributed to making those that we've been relying on faulty and untrustworthy, and they are leading us toward forever repeating disasters that we don't seem to be able to save ourselves from. What does it mean for us to be so wholly controlled and shaped by technologies that themselves are at risk of potential disaster? How might we imagine a future that incorporates networks differently?

²⁵⁰ I think that this utilization of failure as methodology is especially pertinent when engaging with participatory practice—where other voices necessarily become part of an artwork's realization. Being open to not knowing, to trying and failing and trying again, propels participatory projects in a way that allows for a multiplicity of potential.

²⁵¹ Bridle, *New Dark Ages*, Chapter 3.

²⁵² Ibid.

Coming back to how networks function online, Jaron Lanier points out the role that human emotions play in online interactions:

It just turns out as a matter of course, that the same data that is a positive, constructive process for the people who generated it—Black Lives Matter, or the Arab Spring—can be used to irritate other groups. And unfortunately there's this asymmetry in human emotions where the negative emotions of fear and hatred and paranoia and resentment come up faster, more cheaply, and they're harder to dispel than the positive emotions. So what happens is, every time there's some positive motion in these networks, the negative reaction is actually more powerful.²⁵³

Lanier is right in that the ways in which computer networks, even if developed with non-hierarchical goals, have been implicated supports non-progressive means. The overlap that computer networks hold with natural systems, especially plant ecological systems—even through language—to me suggests a place to look for potential solutions. Patterns exist between the technological and the natural, and I'd like to look closer to them as a way of developing a new framework.

Like our interactions with computer networks, our connections with and reliance on biological systems often remain invisible to us, but we are not only reliant on other systems but in fact are a part of them in the most intimate sense. Scott F. Gilbert outlines how the notion of holobionts—organisms plus their persistent communities of symbionts (or organisms living together)—shows

²⁵³ Noah Kulwin, "One Has This Feeling of Having Contributed to Something That's Gone Very Wrong. A conversation with VR pioneer Jaron Lanier on Silicon Valley's politics, being quoted by Mark Zuckerberg, and what went wrong with the internet," in *New York Magazine*, 2018, <http://nymag.com/intelligencer/2018/04/jaron-lanier-interview-on-what-went-wrong-with-the-internet.html>.

“a radically new way of conceptualizing ‘individuals.’”²⁵⁴ We are reliant on our symbionts at the cellular level and can’t be ‘ourselves’ without also including ‘themselves.’²⁵⁵ That is, in the biological sense, there is no such thing as an individual. We are collective by nature. There is “No physiological individuality: we are joined in co-metabolism with our microbes. No developmental individuality: the microbes help build our guts and our immune systems.”²⁵⁶ Instead of *networks* Gilbert discusses *the web* so commonly referred to in the environmental sciences: “Symbiosis is the strategy that supports life on earth, [...] These major symbiotic webs rule the planet, and within these big symbioses are the smaller symbiotic webs of things we call organisms.”²⁵⁷

I’d like to imagine what a future society as modeled by a different type of network might look like. Instead of looking back to intentional communities that have been developed in the past— assemblies that, even if reactionary, have developed from within the overarching framework of colonialism and white supremacy—I look to ecological systems for methods and models to pull from.

If plants are our oldest teachers, why not let them teach?²⁵⁸

²⁵⁴ Scott F Gilbert, “Holobiont by Birth: Multilineage Individuals as the Concretion of Cooperative Processes,” in *Arts of Living on a Damaged Planet, Ghosts and Monsters of the Anthropocene*, ed. Anna Tsing, Heather Swanson, Elaine Gan, and Nils Bubandt (Minneapolis & London: University of Minnesota Press, 2017), Chapter 4 (Monsters of the Anthropocene).

²⁵⁵ Scott F Gilbert, “Holobiont by Birth,” Chapter 4.

²⁵⁶ *Ibid.*, Chapter 4.

²⁵⁷ *Ibid.*

²⁵⁸ Kimmerer, *Braiding Sweetgrass*, 282.

Interstice Three



Figure 15. *the future is a distorted landscape*, documentation of outdoor, multi-screen installation, C. Battle, 2017.
Image by Henry Chan, courtesy of Nuit Blanche Toronto.

Three recent works have investigated strategies for starting conversations with publics and for imagining collective futures. Installed on billboards, video monitors and projected large scale onto the sides of buildings, these works pull from the tools of advertising as strategy for inserting new ideas about community, networks and the environment into the public sphere.

the future is a distorted landscape (2017), a multiscreen video installation made for Nuit Blanche Toronto (curated by Clara Halpern, various locations), took up time travel as a political act and a way to draw attention to the failings and inequalities embedded within contemporary life. The project proposed that visualizations imagining the future, both good and bad, might offer a way to encourage the collective creation of a better one.



Figure 16. *Today in the news more black and brown bodies traumatized the soil is toxic the air is poison*, series of large scale billboards installed in public space, C. Battle, 2018. Image credit: Toni Hafkenscheid, courtesy of Blackwood Gallery.

Today in the news more black and brown bodies traumatized the soil is toxic the air is poison (2018) was both title and starting point for a billboard collage project made specifically in response to the exhibition *The Work of Wind: Air, Land, Sea* (curated by Christine Shaw for the Blackwood Gallery, Mississauga) and its appropriation of the Beaufort Scale of Wind Force.²⁵⁹

²⁵⁹ “In 1806, the British hydrographer and sea admiral Sir Francis Beaufort invented the Beaufort Scale of Wind Force, an index of thirteen levels measuring wind force first used for the practical navigation of 19th century ocean space. It takes the wind at sea, anywhere all over the planet—wherever a ship might encounter it—and reduces it to a format that is not only clear but quantifiable and communicable. The Beaufort Scale takes observation and turns it into information. Beaufort offered sailors something by which they could gauge the force of wind, they could measure it by the ship itself. All they had to do was look around them. By taking a list of words (for example, CALM, MODERATE BREEZE, VIOLENT STORM) and, by attaching them to something real, something actual and observable —‘waves are formed,’ ‘leaves are blown from trees,’ ‘houses are destroyed’—Beaufort had suddenly made them meaningful, useful, a self-evident scale that every sailor on a frigate or man-of-war could be expected to easily apply. The Beaufort Scale of Wind Force became a method for seeing and understanding one’s surroundings, but it also became a tool to expedite colonial processes of extraction, accumulation, privatization, and land dispossession.” From: Christine Shaw, *The Work of Wind: Air, Land, Sea* (Mississauga: Blackwood Gallery, 2018), <https://workofwind.ca/exhibition/>.

The work used the scale as the underlying structure of its overall narrative, proposing that we are currently at the peak of the scale—stuck at 12: Hurricane—and assert that we must find strategies to move ourselves back toward 0: Calm as a necessity for any possible future. Rooted within the understanding that we are at a critical impasse where multiple imbalances within our society—climate change, global capitalism, infrastructural governance, environmental racism—are inherently entwined, *Today in the news more black and brown bodies traumatized the soil is toxic the air is poison* proposes that the potential ways forward are limited: we either continue on as we are, forever caught within the hurricane, or follow new, alternate paths that will help us escape a never-ending loop. Within the exhibition site of an industrial area in Mississauga, Ontario, the 13 billboard collages punctuated the perimeter of the entire exhibition area in an attempt to begin to mark out the path.



Figure 17. *the view from here*, series of large scale billboards installed in public space, C. Battle, 2019. Image credit: roaming-the-planet, courtesy of Capture Photography Festival.

the view from here (2019) was a series of large-scale billboards that considered strategies for imagining a future where we might better sense the digital infrastructure and global networks made invisible by the surface of the sea. Incorporating images from Google Earth taken from the very sites in Vancouver within which the works were installed, the series simultaneously collapsed the constructed view of the image while also placing viewers within it. Speaking directly to passersby through a series of prompts, the work encouraged a collective visualization of how the view from here might one day be different. Curator Jayne Wilkinson helps to explain:

Even as ships fill the harbour and fibre-optic cables line the ocean floor, it is easy to ignore these economies in favour of the ocean's romance. Combining Google Earth-sourced imagery from the specific sites in which they are installed, contour lines suggesting various underwater depths, and lifeforms from an alien world, Battle creates a kind of feedback loop of visual regimes. The Twitterlength poetic texts prompt viewers to ask how they sense, feel, and understand proximity, encouraging a collective visualization of how the view from here might one day be different. As complex image composites produced with satellite imaging and mapping technologies, they remind us that the sea is literally a medium for sending and receiving signals and that it teems with contradictory messages.²⁶⁰

²⁶⁰ Jayne Wilkinson, *Signals in the Sea*, Vancouver: Capture Photography Festival, 2019. <https://capturephotofest.com/public-installations/signals-in-the-sea/>.

Chapter Five

Shaping a Framework of Disaster That Imagines How We Might Work Both From and Within it.

Plants were here first and have had a long time to figure things out. They live both above and below ground and hold the earth in place. Plants know how to make food from light and water. Not only do they feed themselves, but they make enough to sustain the lives of all the rest of us. Plants are providers for the rest of the community and exemplify the virtue of generosity, always offering food. What if Western scientists saw plants as their teachers rather than their subjects? What if they told stories with that lens?²⁶¹

In preceding chapters, I have outlined how networks in communities and technology function, weaving together examples from various disciplines. After pulling together threads from across this research, I come to the conclusion that we need a new kind of network, one that might help us segue from the destructive path that the necrocapitalist system has driven us toward. In searching for how this new network might be shaped, I look to plant ecology to glean solutions. As Robin Wall Kimmerer points out in the quote above, plants have a lot they can teach us. Their strategies for survival, not only after disaster but also how they work collectively to circumvent it, could offer progressive strategies for surviving our current moment and all that is circumscribed within it. Plants are strategic problem solvers who have developed complex systems in order to flourish: most reorient themselves in order to solve energy needs; they harness other animals to aid in reproduction through trickery or complex systems of advertising; they protect themselves and others by utilizing toxic compounds; they use over 20 senses in order to monitor their environments; and they communicate with one another via electrical and chemical signals in order to protect and warn others when danger lurks.²⁶² Plants adjudicate

²⁶¹ Kimmerer, *Braiding Sweetgrass*, 417.

²⁶² Jeremy Hance, "Are plants intelligent? New Book Says Yes," review of *Brilliant Green* by Michael Pollan, *The Guardian*, 4 Aug 2015, <https://www.theguardian.com/environment/radical-conservation/2015/aug/04/plants-intelligent-sentient-book-brilliant-green-internet>.

situations and make decisions as to how to respond: “Each choice a plant makes is based on this type of calculation: what is the smallest quantity of resources that will serve to solve the problem?”²⁶³ Plants operate more like colonies than individuals, and recognize the power of the holobiont discussed earlier in Chapter Four: “what ultimately distinguishes a plant from an animal is its divisibility: its being equipped with numerous ‘command centers’ and a network structure not unlike the Internet’s.[...] [T]hey manifest a kind of ‘swarm intelligence’ that enables them to behave not as an individual but as a multitude.”²⁶⁴

My approach to looking to plants is, admittedly, made up of broad strokes—plants don’t always work together in ways that are entirely altruistic and they often tackle problems by sacrificing the most fragile among them so that stronger individuals can succeed. I approach their strategies from a perspective of selectivity, as an artist, utilizing such creative license is a critical part of my methodology. I’d like to consider the strategies that plants use in order to build and sustain networks as a potential roadmap for our own communities. Necessarily then, I am focused only on strategies that might in turn offer progressive solutions for overcoming the systems our current society has shaped. These then, might operate beyond solely subverting current systems, but also develop new networks and systems that run parallel. First, I wonder how plants strategize in times of disaster. How do they anticipate and respond and what steps do they take in order to avert potential threats within their networks?

Studies in plant ecology have shown that positive interactions amongst plants, especially those that help promote a neighbours’ survival, increase in times of overall stress—despite their differences.²⁶⁵ Looking to plant dynamics in intertidal habitats, ecologists Mark D. Bertness and George H. Leonard concluded that: “positive interactions play a major, but largely unappreciated role in shoreline communities and that they are predictable under physically stressful conditions

²⁶³ Michael Pollan, *Brilliant Green* (Washington, Covelo and London: Island Press, 2013. Kindle edition), Chapter 4.

²⁶⁴ Pollan, *Brilliant Green*, Introduction.

²⁶⁵ Mark D Bertness and George H. Leonard, “The Role of Positive Interactions in Communities: Lessons from Intertidal Habitats,” in *Ecology*, Vol. 78, No. 7 (Oct., 1997).

across spatial scales ranging from tidal to latitudinal gradients.”²⁶⁶ They note the fact that these positive interactions are underappreciated within the scientific community and that this is an important factor to consider when reading about their studies. It points toward the larger framework of knowledge our western scientific approaches are situated within. Bubandt and Tsing call for an approach to biological studies that pays “attention to histories of social relations crossing points of view, species, and even inanimate objects, such as water and sand.”²⁶⁷ They describe the approach as a way to make visible ‘feral dynamics,’ a term the two coined to describe the “anthropogenic landscapes set in motion not just by the intentions of human engineers but also by the cascading effects of more-than-human negotiations.”²⁶⁸ This attention to that which is neglected or overlooked in our dominant systems and structures is the lens that I would like to bring to considering the role that disaster plays within communities. I see overlap between what Bertness and Leonard have documented within intertidal systems and how we might apply that knowledge to our own communities: “Positive interactions that result from neighbors buffering one another from stressful conditions are predictably important community forces in physically stressful habitats.”²⁶⁹ That is, in times of stress, intertidal plants of various types prioritize positive interactions as a method to support and strengthen collective networks.

How might we appropriate the strategies employed by intertidal plants into our own communities? Consider our economic model as an example: it can never prioritize the communities struggling in part of its network; it would be contradictory to its fundamental formation. Within the context of disaster as I have laid out across this document, such a system will always necessarily result in disaster. What if, instead, our communities worked to prioritize positive interactions as modeled by intertidal plants? Common Ground Relief, introduced in Chapter Three, serves as a working example of how positive interactions at the community level can help reshape the impacts of a capitalist-driven model during times of stress. By refusing to allow real estate developers to be the sole voice in the rebuilding of New Orleans after hurricane

²⁶⁶ Bertness and Leonard, “The Role of Positive Interactions,” 1986.

²⁶⁷ Nils Bubandt and Anna Tsing, “Feral Dynamics of Post-Industrial Ruin,” in *Journal of Ethnobiology*, 38(1): 1.

²⁶⁸ Ibid.

²⁶⁹ Bertness and Leonard, “The Role of Positive Interactions,” 1976.

Katrina, Common Ground contributed to strengthening community by prioritizing what local communities needed.

An example from plant ecology can help to re-imagine economic systems and relationships of trade. Research has found that plants and fungi have evolved a system of exchange based on fair trade: “Fungi provide plants with phosphorus they can’t get from the soil on their own; plants provide fungi with carbohydrates.”²⁷⁰ The system of exchange has incentive and reward built into its very foundation in order to maintain this beneficial balance. In a controlled study, evolutionary biologist Stuart West found that species have developed a unique method for exchanging phosphorus and carbon: and that the more phosphorus a plant received, the more carbon it would provide as reward to a nearby fungus.²⁷¹ What is more, both species make decisions on the individual level: “A plant can identify the function of an individual fungus and reward it accordingly, and a fungus can identify the function of a host and reward it accordingly—they know who the good and bad guys are.”²⁷² What would it look like if we adopted the strategies of fungi and plants in our own systems of trade? What if there was a method built into social media that helped individuals not only see how their own contributions are taken up in the overall system as it happened, but also helped create a better balance following the fungi/plant relationship of reward and incentive? Perhaps then individuals could determine for themselves whether the reward of contributing content to the platform, via a Facebook post, for example, was balanced against the incentive the multi-billion-dollar company offered in exchange, and adapt accordingly. In turn, such a system of exchange might shift the imbalance currently seen on social media platforms: where posts propagating hate and fear “come up faster, [and] more cheaply” (to revisit a quote by Lanier cited earlier).²⁷³

As Yusoff, Singh and others cited throughout this dissertation have helped to articulate,

²⁷⁰ Ferris Jabr, “Plants and fungi share fair-trade underground market,” in *New Scientist*, 11 August 2011.

²⁷¹ Jabr, “Plants and fungi share fair-trade.”

²⁷² Ibid.

²⁷³ Kulwin, “One Has This Feeling of Having Contributed.”

recognizing the structures and systems that dominate is only a first step. We need to understand the foundation itself in order for it to be “*disassembled* and give rise to new forms of *reassembly*.”²⁷⁴ Looking to how crisis and disaster are themselves built into the very system of capitalism, Eric Cazdyn separates disaster from crisis based on necessity. Situating disaster as the moment of breakdown between relations, he notes that: “crises are built right into many systems themselves; systems are structured so that crises will occur, strengthening and reproducing the systems themselves.”²⁷⁵ Using the boom-bust cycles of capitalism as an example, he notes that both disaster and (necessary) crisis are prominent factors within the model. Capitalism utilizes breakdown in order to build itself back up from within the exact same system.

How might this ‘boom and bust’ cycle be framed differently? Robin W. Kimmerer outlines the strategy of mast fruiting employed by pecans, offering an example of how the model might shift: “nut trees don’t make a crop every year, but rather produce at unpredictable intervals. Some years a feast, most years a famine, a boom and bust cycle known as mast fruiting.”²⁷⁶ Nuts work this principle of boom and bust into their very structure via their hard, almost impenetrable shell as a way to ensure that they are protected and able to be stored for long periods of time: “Nuts are designed to be brought inside, to save for later in a chipmunk’s cache, or in the root cellar of an Oklahoma cabin. In the way of all hoards, some will surely be forgotten—and then a tree is born.”²⁷⁷ Similarly, they “are designed to be food for winter, when you need fat and protein, heavy calories to keep you warm.”²⁷⁸ Pecan trees work together in unison in order to survive:

For mast fruiting to succeed in generating new forests, each tree has to make lots and lots of nuts—so many that it overwhelms the would-be seed predators. If a tree just plodded

²⁷⁴ Srinivasan and Fish, *After the Internet*, 22. (italics in original)

²⁷⁵ Eric Cazdyn, “Disaster, Crisis, Revolution,” *South Atlantic Quarterly*, Durham: Duke University Press, (106:4), 649.

²⁷⁶ Kimmerer, *Braiding Sweetgrass*, 28.

²⁷⁷ Ibid.

²⁷⁸ Ibid.

along making a few nuts every year, they'd all get eaten and there would be no next generation of pecans. But given the high caloric value of nuts, the trees can't afford this outpouring every year—they have to save up for it, as a family saves up for a special event. Mast-fruiting trees spend years making sugar, and rather than spending it little by little, they stick it under the proverbial mattress, banking calories as starch in their roots. If one tree fruits, they all fruit—there are no soloists. Not one tree in a grove, but the whole grove; not one grove in the forest, but every grove; all across the county and all across the state. The trees act not as individuals, but somehow as a collective. Exactly how they do this, we don't yet know. But what we see is the power of unity. What happens to one happens to us all. We can starve together or feast together. All flourishing is mutual.²⁷⁹

It is a model of the boom and bust cycle that doesn't result in crisis. Imagine if, instead of the fallout of boom and bust seen in communities dominated by the oil and gas industry, in Alberta for instance, where recession, mass addiction and destabilization rise and fall with the capitalistic cycles of extraction, we followed the pecan's model of prioritizing preparedness in sustainable ways. What might it look like to prioritize a network of beneficial exchange instead of the one seen today that is centralized by those with power and money? Our current network necessarily ends in disaster since, as Cazdyn has stated, the model is dependent on crisis. We need to develop networks that better assuage disaster in the first place.

Pecan trees offer an example reliant on cooperation, a decentralized network that operates collectively to ensure a strengthened and healthy community overall. My artistic practice is dedicated to considering the nuance of this potential. How might we shift our own community structures to mimic the webs of support seen in mast fruiting by plants? How might micro gestures of practice contribute to supporting this potential? By developing situations where we can come together and simultaneously reach out to others sharing the same concerns and goals,

²⁷⁹ Ibid.

we might begin to develop a vast network of potential. Unlike the attempt to build utopic communities outside of dominant society, the radical communes of the 1970s and 80s for example, instead I see the development of new locales *within* as essential to shifting dominant trajectories. Finding those already in our communities to work with, to organize with, and to share in new potentials for the future could ensure a diversity of voices that I find lacking in the isolated and uniform communal structure.²⁸⁰

Through this research, I see the imagining of different futures and different worlds as tactic. Climate change is here, it is happening, but what might the future within such a radically shifted climate *look* like? How can we adapt strategies for this new world that are equitable, caring and progressive—that will ensure our survival despite the odds? The ways in which our current systems encourage us to other and hate and conquer one another has disaster built into its very core. I want the future to be better. As K-HOLE articulate:

Once upon a time people were born into communities and had to find their individuality.
Today people are born individuals and have to find their communities.²⁸¹

Taking cues from Tuck and her prioritizing a shift away from damage-centred research, I find strategy in looking at disaster through a different lens, one that prioritizes the altruism it fosters as examined by Solnit. This strategy of looking past the damage is tied to, but actively moves beyond, notions of hope. I see the framework of hopelessness, when it comes to visualizing realities of the future, the climate crisis, for example, as a part of the lexicon of white supremacy. The act of giving up, of giving in and of not participating in solutions (even if on the smallest of

²⁸⁰ An example of such strategy is the public programming associated with the BAD STARS exhibition at Trinity Square Video in 2018 (Toronto), where I invited an interdisciplinary group to contribute to the discussion through the contribution of photographic imagery, and invited guest speakers into the gallery space including, Michael Williams from the Universe Planetarium at the University of Toronto [May 4, 2018], the Indigenous Environmental Justice Project [May 26, 2018], and the re:assemblage collective [June 9, 2018].

²⁸¹ K-HOLE, *Youth Mode*.

scales) as sustained by larger frameworks of knowledge that uphold the privilege of a relative few. We can learn from the persistence of Black and Indigenous communities who, despite the impacts of slavery, colonialism, oppression and the repercussions of tenacious racism and trauma, continue to push forward and look to the future. This strategy of persistence, the inherent belief that *we will overcome* is a worldview that has persisted within marginalized communities in spite of the colonial project and it has been passed on from generation to generation. Sharpe helps to articulate: “I am interested in ways of seeing and imagining responses to the terror visited on Black life and the ways we inhabit it, are inhabited by it, and refuse it... [I] am interested in the ways we live in and despite that terror.”²⁸² We need to envision our world differently as an active tactic. I approach disaster in a way that repositions *failure* following discourses within artistic practice, situating it as a framework of potential; a framework that “can equally offer an ideal standpoint for open experimentation and for raising constant questions.”²⁸³ Taking cues from Berlant’s concept of cruel optimism, I’d like to shift the ways we expect disasters to unfold through the introduction of new norms. Writing on intuition, Berlant outlines how the ways in which we respond (to crisis, to the world, to one another) are not automatic but trained, and inherently tied to both history and memory. She defines intuition as “the process of dynamic sensual data-gathering through which affect takes shape in forms whose job it is to make reliable sense of life.”²⁸⁴ I see Berlant’s understanding of intuition that is tied to memory and experience as profoundly useful in considering how it is that we deal with disasters once they occur. By reshaping and informing intuition through acts of listening to others’ perspectives, we might in turn create new insights through the development of shared experiences and memories that will better prepare us for the future. Through the shifting of focus from disaster and trauma toward active solutions and tactics, the reframing of how we consider disaster could in turn reshape how disasters themselves occur.²⁸⁵ Systems and networks become

²⁸² Sharpe, *In the Wake*, 116.

²⁸³ Susana S Martins. “Failure as Art and Art History as Failure,” *THIRDTXT Critical Perspectives on Contemporary Art and Culture* (August 2015): 2, http://www.thirdtext.org/domains/thirdtext.com/local/media/images/medium/SSMartins_website_format_1.pdf.

²⁸⁴ Berlant, *Cruel Optimism*, 2.

²⁸⁵ Here, I think it is important to remember de Certeau’s use of the term ‘tactics’ and how they pull from larger systems while allowing for the unexpected, necessarily denying the need for a clear sense of themselves ahead of time: “It does not, therefore have the option of planning general strategy and viewing the adversary as a whole within a district, visible and objectifiable space. It operates in isolated actions, blow by blow. It takes advantage of ‘opportunities’ and depends on them, being without any base where it could stockpile its winnings, build up its own

most visible in times of failure and looking closely at how disaster operates: how it forms, how we engage with and how we respond to it, can offer valuable insight.

Tsing offers an example of how we might reframe disaster into solutions and strategy for progressing forward in *The Mushroom at the end of the World: On the Possibility of Life in Capitalist Ruins*. Tsing follows the natural and economic life of the matsutake, a highly prized mushroom known for its distinct spicy-aromatic odor. With a wide growing distribution, matsutake form symbiotic relationships with roots, helping trees grow and forests thrive, especially those in otherwise difficult or disturbed landscapes.²⁸⁶ Looking closer to the matsutake's ability to help forests grow, she reveals strategies for how one might survive despite the influence of late-stage capitalism: "To follow matsutake guides us to possibilities of coexistence within environmental disturbance. [...] Still, matsutake show one kind of collaborative survival."²⁸⁷ Tsing argues that, first we must recognize the role that precarity plays in shaping our 'earthwide' current moment, then we must work to imagine other models and potentials in order to change and survive it.²⁸⁸ This recognition enables her to be realistic about not only the benefits of potential models and strategies, but also the negative elements that might become inevitable byproducts of even the most progressive of structures. Within this balance, she considers the matsutake, and the ways it is taken up into an economic model shaped by humans: "Consider again matsutake as a commodity, ready to be sent from Yunnan to Japan. What we have is mushrooms, that is, fruiting bodies of underground fungi. The fungi require the traffic of the commons to flourish; no mushrooms emerge without forest disturbance. The privately owned mushroom is an offshoot from a communally living underground body, a body forged through the possibilities of latent commons, human and not human."²⁸⁹

position, and plan raids." de Certeau. *The Practice of Everyday Life*, 36.

²⁸⁶ Tsing, *The Mushroom at the End of the World*.

²⁸⁷ Tsing, *The Mushroom at the End of the World*, 4.

²⁸⁸ *Ibid.*, 20.

²⁸⁹ *Ibid.*, 271.

The example of the matsutake doesn't always tease out progressive or just strategies—especially since its story is told from one focused on human engagement. But my approach is a selective one and so I look to the mushroom, and to Tsing's examination of it, as one that offers interesting potential for looking toward the future. Thinking deeper about 'communities' she instead borrows the term 'assemblages' from ecology as a way "to get around the sometimes fixed and bounded connotations of ecological 'community'"²⁹⁰ and to find systems and networks that are generative, that continually form and reshape. These assemblages collaborate with others, working across differences in order to not only sustain but also to adapt and advance living processes. Looking at the strategy of the matsutake mushroom, Tsing notes that fungi continually change form, "Fungi are famous for changing shape in relation to their encounters and environments,"²⁹¹ and intimates that we too imagine futures where we might adapt and adjust our own communities and societies in relation to environmental encounters. I see the strategy of the matsutake mushroom as a guide for how our own systems and networks could be different. Imagine if technology was designed in ways that allowed for a fungal network style of adaptability and collaboration. What if social media, for example, was built to allow for a working across differences instead of binding us within the echo chambers we are constantly warned about? What if, in turn, software was able to continually adapt and help us to learn from difference in ways that resulted in tangible change across communities?

Similar to Tsing, Kimmerer looks to lichens for strategies to pull from. Lichens are composite organisms, associations that occur between fungi and either algae or cyanobacteria. They are mutualistic and symbiotic.²⁹² "Lichens have no roots, no leaves, no flowers. They are life at its most basic."²⁹³ They are the result of a partnership from which both members benefit: their very survival in fact, is predicated on this mutualism.²⁹⁴ Algae are autotrophs capable of making their own food: "[alga] can make all the sugar it needs for energy, but it's not very good at finding the

²⁹⁰ Ibid., 22.

²⁹¹ Ibid., 47.

²⁹² Peter H. Raven, Ray F. Evert, and Susan E. Eichhorn, *Biology of Plants*, Fifth edition (Worth Publishers: 1992), 223.

²⁹³ Kimmerer, *Braiding Sweetgrass*, 326.

²⁹⁴ Ibid., 327.

minerals it needs. It can only photosynthesize when it's moist, but it has no ability to protect itself from drying."²⁹⁵ The fungus is a heterotroph, or one that must feed on the organic materials of others.²⁹⁶ Essentially, it can't make the sugar needed to survive on its own. "The body of the fungus, a network of delicate threads, goes out hunting for minerals and then absorbs those molecules through its huge surface area. Symbiosis enables the alga and the fungus to engage in a reciprocal exchange of sugar and minerals. The resulting organism behaves as if it were a single entity, with a single name."²⁹⁷ The partnerships are specialized and certain algal/fungus species always and only pair with specific counterparts. They blur the distinction between individual and collective and help us to imagine how we might consider those we also are in partnership with—both human and non-human—and how they might be thought of as partners instead of resources to be exploited. They offer solutions that have persisted, strategies that have continually resulted in survival despite environmental shifts: "Some of earth's oldest beings, lichens are born from reciprocity."²⁹⁸ How might communities in the future be mapped from the specialized partnerships witnessed in lichens? What if the floating cities proposed to help sustain us in a future world ravaged by climate change blurred the distinctions lichens make between the individual and the collective?

In *Gathering Moss: A Natural and Cultural History of Mosses*, Kimmerer imagines further how communities might shift by looking to mosses and the strategies they use to thrive across a variety of ecosystems: "The city mosses have much in common with their urban human counterparts, they are diverse, adaptable, stress-tolerant, resistant to pollution, and thrive on crowded conditions."²⁹⁹ She considers "the conditions that foster diverse communities rather than isolated individuals"³⁰⁰ by looking to how it is that mosses survive. Mosses are able to hold onto water and one genus, *Sphagnum*, is capable of absorbing as much as twenty times its

²⁹⁵ Ibid., 328.

²⁹⁶ Raven, Evert, and Eichhorn, *Biology of Plants*, 747.

²⁹⁷ Kimmerer, *Braiding Sweetgrass*, 328.

²⁹⁸ Ibid., 333.

²⁹⁹ Kimmerer, *Gathering Moss*, 91.

³⁰⁰ Ibid., 2.

weight—allowing them to modify the ecosystem as needed.³⁰¹ This in turn modifies other elements within the local ecosystem beyond the increased presence of water itself, effecting the presence of nutrients, temperature and altering the pH of soils.³⁰² Mosses ability to hold onto water ensures they are prepared for disturbance, not only are they able to withstand drought, but their ability to withstand it for long periods of time results in them being one of the first species to establish after forest fires; helping to stabilize soil for other species and thus aiding in post-fire recovery. Upon disturbance, they release fixed nitrogen into the soil thus making it available and encouraging new growth throughout the ecosystem.³⁰³ This release of nitrogen though, is entirely dependent on disturbance in order to be released, essentially ensuring that when mosses are present, ecosystems have a built-in survival mechanism that aids a community’s survival post-disaster: “transfer of N[itrogen] from moss to the soil is slow and is only promoted after disturbances. [...] However, mosses colonized by N[itrogen]-fixing cyanobacteria likely act as a N[itrogen] source in the long term, releasing N[itrogen] upon disturbances like drying-rewetting and fire events.”³⁰⁴ What if we developed communities in ways that would benefit from disturbance similar to a forests’ relationship to fire?³⁰⁵ What if we shifted of our relationship to disaster into something more akin to disturbance (like the forest’s relationship with fire), approaching it as *change*, as something that has the potential to realign possibilities and open space for action. As an artist dedicated to imagining alternative futures, I argue that the possibilities of this strategy offer potential solutions for tackling some of the very crisis we face with climate change.

Looking to forest succession, specifically the ways forests develop and recover from fire, can offer more insight into strategies we might utilize to prepare for and survive disaster in our own

³⁰¹ Ibid., 113.

³⁰² Ibid., 114.

³⁰³ Kathrin Rousk, Davey L. Jones, and Thomas H. DeLuca, “Moss-cyanobacteria associations as biogenic sources of nitrogen in boreal forest ecosystems,” in *Frontiers in microbiology* vol. 4 150. 17 Jun. 2013, doi:10.3389/fmicb.2013.00150.

³⁰⁴ Ibid.

³⁰⁵ As I write this section on mosses and consider their relationship with fire, the Chuckegg Creek Wildfire, continues to burn in northern Alberta, now for over two months. In all, the fire that began on May 12, 2019 was listed as ‘under control’ on October 31, 2019 (although firefighters were continuing to monitor and put out hotspots at that time).

communities: “The apparent destruction of a disturbance is in fact an act of renewal, provided the balance is right.”³⁰⁶ Forest succession, that is, the sequence in which a forest community develops after disturbance, is contextualized based on a series of stages following the species of plants that develop over time. In ecology, the first species to develop post-fire are called pioneers (the first colonists), and “the ultimate association of species achieved is called a climax.”³⁰⁷ While the process of forest succession has a lot in common with human communities and dynamics (seen even through shared terminology), the differences come into play when one considers how forests respond with balance to the inevitable shifting resources caused by their development in the first place. These strategies have ensured their perpetual success: “The pioneers produce a community based on the principles of unlimited growth, sprawl, and high energy consumption, sucking up resources as fast as they can, wresting land from others through competition, and then moving on. When resources begin to run short, as they always will, cooperation and strategies that promote stability—strategies perfected by rainforest ecosystems—will be favored by evolution. The breadth and depth of these reciprocal symbioses are especially well developed in old growth forests, which are designed for the long haul.”³⁰⁸ Forests have prioritized cooperation and maintenance of the balance necessary for all to contribute to its overall success. Despite the goal of development toward a climax community, forests are designed to maintain and withstand continual change: “A climax community, however, is an ideal concept that mainly serves as a reference point against which to measure community change. In reality, climactic conditions often change, natural disturbances such as hurricanes and landslides occur, and animals modify the nature of the changing communities. The communities that develop at a particular place reflect a balance of many different environmental factors.”³⁰⁹ The ability to withstand and adapt to change is built into the very foundation of how a forest thrives. I assert that the future communities we imagine, and later construct, might benefit from similar foundations.

³⁰⁶ Kimmerer, *Gathering Moss*, 68.

³⁰⁷ Ricklefs, *The Economy of Nature*, 427.

³⁰⁸ Kimmerer, *Braiding Sweetgrass*, 344.

³⁰⁹ Raven, Evert, and Eichhorn, *Biology of Plants*, 655.

Imagination is one of our most powerful tools. What we imagine, we can become. I like to imagine what it would be like if the Honorable Harvest were the law of the land today, as it was in our past. Imagine if a developer, eyeing open land for a shopping mall, had to ask the goldenrod, the meadowlarks, and the monarch butterflies for permission to take their homeland. What if he had to abide by the answer? Why not?³¹⁰

While, like Kimmerer, Tsing emphasizes the importance of imagining different futures through close attention to ecological complexities, she, Elaine Gan, Heather Swanson and Nils Bubandt also argue the need to relearn curiosity: “Curiosity is an attunement to multispecies entanglement, complexity, and the shimmer all around us.”³¹¹ This imagining, this curiosity, is where I see artistic practice as a valuable tool in helping to find solutions to our disastrous predicament. Through continual questioning, and a trial and error approach, the arts can offer us strategies for imagining the future anew. Not only by working with communities but through redefining what community might mean, engaged artistic practice can help us to overcome the failings that unchecked capitalism has led us into. By looking to strategies found in ecology and reconsidering how our own networks—both metaphorical, and technological—function, we might find solutions to working through the climate crisis and develop progressive communities that care not only for the earth that sustains us but also for one another. What if social media looked more like the continual web of complexity created by mushrooms?

Living in a time of planetary catastrophe thus begins with a practice at once humble and difficult: noticing the worlds around us.³¹²

³¹⁰ Kimmerer, *Braiding Sweetgrass*, 227.

³¹¹ Elaine Gan, Anna Tsing, Heather Swanson, and Nils Bubandt, “Haunted Landscapes of the Anthropocene,” in *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*, eds. Anna Tsing Lowenhaupt, Heather Swanson, Elaine Gan, and Nils Bubandt (Minneapolis & London, University of Minnesota Press, 2017. Kindle edition), 330.

³¹² *Ibid.*

Interstice Four

The *seeds for the end of the world* project discussed in Interstice Two is also serving as the starting point for a curatorial project—*Grasping at the Roots*—being developed for the John & Maggie Mitchell Art Gallery (MAG) and opening the winter of 2020.³¹³ A chance to put theory into practice, this new project translates ideas generated across this dissertation into the space of the gallery. Beginning with plant ecology and the strategies plants use to take root and build resiliency, the project considers how we might construct and shape communities following their example. Through a curated exhibition and the commissioning of new work, this exhibition strives to engage with ideas about community in active ways—in ways that go beyond theorizing about how future communities might be different—and instead begins to develop foundations *now* with hopes that they will continue on into the future.

Our conversation, however, must begin with the obvious: the public is collapsing as an ideal within a political climate still driven by inequality, institutional unaccountability, and economic austerity. In other words, as the longevity of the top-down, public-welfare-state paradigm is in question today, we need urgently to search for alternatives, and to seek a more functional manifestation of public thinking and action. The question must be different questions if we want different answers.³¹⁴

Through ongoing conversation with the communities they work with, artists in *Grasping at the Roots* privilege participation and working intimately with communities as a critical part of artistic practice. In a time when many—especially those on the margins—face real life threats and challenges, these artists prioritize community-building and engaged relationships built on responsibility and care. Included works provide examples of strategies artists have used to generate significant difference in communities through critical and sustained engagement;

³¹³ The title for the exhibition is inspired by and references Angela Davis, *Y. Women, Culture & Politics*. (New York: Random House, 1989), 14.

³¹⁴ Cruz and Forman, “Latin America and a New Political Leadership,” 73.

inspiring others to consider respectful ways of working that prioritize care and meaningful participation.

Grasping at the Roots takes cues from mycorrhizae, mutually beneficial associations between fungi and plants. Fungi have the ability to enhance nutrient take up in plant roots, ensuring healthy growth. In return, they benefit by absorbing the plant carbohydrates that they require in order to sustain growth. The project looks, not only to strategies artists use to support and sustain growth with those they work with, but also to curatorial strategies that might in turn better support artists. The exhibition operates from the premise that this strategy of care has the ability to foster and develop community in sustainable and meaningful ways.

Utilizing prolonged, ongoing conversation and participation as curatorial strategy, artists and myself are working to generate a new work together that responds to the urgent and critical time we live in. By working together, and through ongoing conversations, the exhibition points toward while simultaneously creating, a root system to continually build upon and illustrates strategies viewers can take into their own communities as potential tactics. Artists in the exhibition include: Eugenio Salas, Debbie Ebanks Schulms, Serena Lee and Shawn Tse. With video by Scott Portingale.

Chapter Six

Concluding Remarks

The worlds built by colonialism and capitalism are unlivable for us all.³¹⁵

We are already living within disaster. The epigraph by Natasha Myers points to the cause. The structures we have designed for our communities have disaster built into their very foundations—often requiring it in order to function (like the boom and bust cycles of free-market capitalism). Despite this, during times of crisis, communities come together in ways that show glimpses of alternative strategies—other modes of being defined by the altruism and care they provide one another when disaster strikes. Deeply woven into the fabric of our communities, I look to disaster as a way to imagine alternative futures because its presence—along with possible strategies for overcoming it—are made most visible during times of crisis.

Once the framework of disaster is made visible, tactics for shifting how we build communities in the future become clearer. My strategy with this research is to better understand how disaster is built, not only into overall society but also into the methods we use to navigate it—technology and the internet—both driving how we interact with one another and rapidly shifting our communities on the local level. Across this dissertation I first identify where and how disaster is built into systems and then search for alternative strategies for relief from it. Looking to plant ecology for potential alternatives, this research posits the importance of searching for solutions outside of our own structures. Taking cues from Brown, who defines a shift as “social, political, economic and/or cultural transformation,”³¹⁶ this dissertation seeks to learn from key moments in order to develop tactics that can lead toward new and more just communities: “We believe that

³¹⁵ Natasha Myers, “How to grow livable worlds: Ten not-so-easy steps,” in *The World to Come*, ed Kerry Oliver Smith, 53-63 (Gainesville, Florida: Harn Museum of Art, 2018), 2.

³¹⁶ Brown, *Emergent Strategies*, 77.

shifts can emerge from collective ‘aha’ moments when social movements awaken the popular imagination to new possibilities and spark social action. And we are arguing that the coming shocks and slides—if we anticipate and prepare for them properly—can be key opportunities to spark these ‘aha’ moments.”³¹⁷ Previously discussed artistic projects by SERC, Chin and Haeg provide the ‘aha’ moments Brown is talking about. They have and continue to make tangible change in the world while also redefining how it is that we might consider the world itself. My own artistic practice seeks to follow these examples by sparking conversation about alternative ways to imagine the future. Looking to the complexity of disaster, my practice imagines how we might utilize different strategies in order to start anew, in order to create something better. The foundations of the system that our society prioritizes is tightly woven up with disaster and my research aims to shed light on these systems while simultaneously imagining ways out of them.

Through this research I hope to facilitate conversation about the pressing issues of our time. My work considers the act of conversation as an effective tactic for manifesting an active and reflective framework. Looking to the etymology of *conversation*, I draw from its Latin root *conversari*: “to live, dwell, live with, keep company with.”³¹⁸ Pulling from the post-disaster neighbourhood as described by Solnit, I consider disaster as a unique opportunity for unexpected partnerships which can create the space for the dissensus that Mouffe calls for. My approach here relies on the assumption that the dominant modes of dialogue surrounding expectations about both the causes and manifestations of disaster within the public sphere have been thoroughly dominated by perspectives also benefitting from the creation of disaster (economically and/or socially). I argue that, by focusing on perspectives left out of the debate, on those operating outside of the mainstream, and by giving them more visibility, we might begin to shift collective norms. For Mouffe, such shifts are necessary for a healthy democracy which requires that multiple perspectives are continually challenged and debated in order to create hegemonic principles capable of better reflecting the diversity of the masses. My assertion is that: by introducing a variety of voices typically omitted from dominant discourse about how we

³¹⁷ Brown, *Emergent Strategies*, 78.

³¹⁸ “Conversation, Origin and Meaning of Conversation,” Online Etymology Dictionary, accessed June 21, 2018, <https://www.etymonline.com/word/conversation>.

collectively approach and deal with the many layers implicated in disaster; and by decentering our prescribed notions about strategies and solutions to such events, we might foster the potential to better deal with them—and, perhaps even shift how they occur. I see this work as a tactic to have ready to be picked up when we need alternatives most. Myers continues to help clarify:

There is no way to “mitigate” Anthropocenic violence using Anthropocene logics. Refuse calls to design for the Anthropocene. Such designs are precisely the technological fixes that will keep us locked into the same rhythms of extraction and dispossession. Refuse to be lured into those climate change edutainment complexes, those gleaming glass, metal, and concrete infrastructures whose capital- and labour- intensive designs exquisitely expose the ruse of sustainability as an aesthetic maneuver grounded in Edenic visions of nature. This is not the kind of green that will save us.³¹⁹

The dossier accompanying this dissertation details all of the projects that I have developed while thinking through this research and includes further installation documentation. Because this research pulls from across disciplines, a glossary of terms is included as a way to begin to develop a common language and understanding; to give you a better sense of where I’m coming from. It contains within it definitions as I have come to accept them, at times different from how others in specific disciplines utilize them. The glossary is a nod to Tuck and Ree’s *A Glossary of Haunting* where they use the form of the glossary to actively reframe understanding: “This glossary is about justice, but in a sense that is rarely referenced. It is about righting (and sometimes wronging) wrongs; about hauntings, mercy, monsters, generational debt, horror films, and what they might mean for understanding settler colonialism, ceremony, revenge, and decolonization. In the entries of this glossary I will tell the story of my thinking on haunting.”³²⁰ I take Tuck and Ree’s strategy of stating one’s terms as a necessary tool to help shift our current models, to help shape new patterns.

³¹⁹ Myers, “The World to Come,” 2.

³²⁰ Tuck and Ree, “A Glossary of Haunting,” 640.

My artistic practice employs strategies of urgency, responsiveness and constant production as a necessary tactic allowing for quick adaptation to the larger ethos and politics of the time. The strategy of my overall project is to approach large-scale crises through the development of responsive tactics that operate on a more localized, micro scale. Overall, these tactics attempt to disrupt the dominant systems that might be harming us through a careful engagement with the everyday, and through the shaping of shared experiences. Looking to other systems to pull from, my work considers strategies for imagining how our structures—how our future—might be different. This difference is necessarily left open ended and prone to failure. It is a difference that embraces the unknown and the speculative. Employing strategies that operate on the small scale, my overall project seeks to plant kernels of ideas that draw attention to the problems while also offering alternative strategies and potential ways out of them. It offers the chance to try—and to fail—and to try again. I operate on the premise that in order to progress out of the systems we are currently stuck within, we need to first be able to imagine different futures. We need new patterns.



Figure 18. *Today in the news more black and brown bodies traumatized the soil is toxic the air is poison*, from series of large scale billboards, C. Battle, 2018.

Glossary of Terms: A Collection of Working Definitions

A work in progress, this glossary is devised as a strategy for isolating key terms and concepts from within this larger research project. As artistic projects are developed and published (again pulling from Stadler cited in chapter one), definitions will be further considered and reconciled.

Accident

Looking to changes in the conceptual frameworks related to disaster, Claude Gilbert notes that accident is clearly separated from crisis, even though “accident actually is the first and most important factor triggering what we call ‘post-accidental’ crises.”³²¹ “The suggestion was made that accidents could occur without any crisis, and that crises could emerge without any accident.”³²²

Altruism

In ecology, altruism is considered in an evolutionary sense, “enhancing the fitness of an unrelated individual by acts that reduce the evolutionary fitness of the altruistic individual.”³²³

Anthropocene

Meant to describe the geologic time frame we currently live in while pointing directly to the impacts that humans have had on altering the earth. From *anthropo*, or “human,” and *cene*, or “new.”

Assemblage

In ecology, it has been proposed that the clearest and most comprehensive definition of *assemblage* should be “a taxonomically related group of species that occur together in space and time.”³²⁴

Catastrophe

The Disaster Research Center at the University of Delaware defines *catastrophe* based on four

³²¹ Gilbert, “Studying Disaster,” 7.

³²² Ibid., 8.

³²³ Ricklefs, *The Economy of Nature*, 536.

³²⁴ James T. Stroud, Michael R. Bush, Mark C. Ladd, Robert J. Nowicki, Andrew A. Shantz, and Jennifer Sweatman, “Is a community still a community? Reviewing definitions of key terms in community ecology,” in *Ecol Evol.* 5(21) (Published online 2015 Oct 7), 4761.

critical quantitative and qualitative differences from routine accidents and disaster that can be “seen at the organizational, community and societal levels.”³²⁵ In a catastrophe:

1. “Most or all of the community built structure is heavily impacted.” As an example they provide Hurricane Hugo (1989) where more than 90% of all homes in St. Croix in the US. Virgin Islands were heavily damaged or destroyed. Important to note is that, in distinguishing between a catastrophe versus a disaster, the loss is relative to the total base and “the facilities and operational bases of most emergency organizations are themselves usually directly hit.”³²⁶
2. “Local officials are unable to undertake their usual work roles, and this often extends into the recovery period.” Often then, in a catastrophe, leadership roles are taken up by outsiders to the community.³²⁷
3. “Most, if not all, of the everyday community functions are sharply and simultaneously interrupted.” The research centre notes that in major disasters this is often not the case, but that catastrophes differ in that, “most if not all places of work, recreation, worship and education such as schools totally shut down and the lifeline infrastructure is so badly disrupted that there will be stoppages or extensive shortages of electricity, water, mail or phone services as well as other means of communication and transportation.”³²⁸
4. “Finally, help from nearby communities cannot be provided. In many catastrophes not only are all or most of the residents in a community directly affected, but often those in nearby localities will be similarly stricken.” The research centre provides the typhoons that often hit southwest Asia and the Chernobyl nuclear accident here as examples noting that “In short, catastrophes tend to affect multiple communities, and often have a regional character.”³²⁹

Critical to note, is that, although planning for catastrophe might be different than for disasters, the immediate response on the ground is similar, with survivors prioritizing prosocial behaviour.

³²⁵ E. L. Quarantelli, “Preliminary Paper #304 - Emergencies, Disaster And Catastrophes Are Different Phenomena,” The University of Delaware Disaster Research Center, 2000, 1 & 2.

³²⁶ Quarantelli, “Preliminary Paper #304,” 2.

³²⁷ Ibid., 3.

³²⁸ Ibid.

³²⁹ Ibid.

Any differences in response seen between the two appear going up the social scale from individual to nation.³³⁰

Climax Community

The final stage in a successional series; its nature is determined largely by the climate and soil of the region.³³¹

Community

In ecology, community is defined as: “many populations of different kinds living in the same place.”³³² The study of populations and communities is “concerned with the development of ecological structures and with the regulation of ecological processes by means of population growth and the interaction of populations with the environment and each other.”³³³

Unlike organisms, “communities have no rigidly defined boundaries; no skin separates a community from what surrounds it. The total interconnectedness of ecological systems means that interactions between populations spread across the globe as individuals and materials move between habitats and regions.”³³⁴ “Thus the community is an abstraction representing a level of organization rather than a unit of structure in ecology.”³³⁵

In 2005, Stroud, Bush, Ladd, Nocicki, Shantz, and Sweatman, revisited key definitions utilized in ecology and found that “*community*, is arguably the most prone to varying interpretations among ecologists.”³³⁶ They emphasize the importance of the definition including the features of space, time, as well as species interactions—both direct and indirect—as all critical when considering ecological communities.³³⁷

³³⁰ Ibid., 4.

³³¹ Raven, Evert, and Eichhorn, *Biology of Plants*, 741.

³³² Ricklefs, *The Economy of Nature*, 3.

³³³ Ibid., 4.

³³⁴ Ricklefs, *The Economy of Nature*, 3.

³³⁵ Ibid., 4.

³³⁶ Stroud et al, “Is a community still a community,” 4728.

³³⁷ Stroud et al, “Is a community still a community.”

When considering human communities, professor of art history, Grant Kester notes that “Any community is constructed out of the specific identities of its members in a process that will, inevitably, promote or legitimate some aspects of these identities at the expense of others.”³³⁸ Art Historian and Critic Claire Bishop goes on to note that “the neoliberal idea of community doesn’t seek to build social relations, but rather to erode them.”³³⁹

Competition

Defined as “interaction between members of the same population or of two or more populations in order to obtain a mutually required resource available in limited supply.”³⁴⁰

Comuna

Comunas (commonly translates to ‘commune’ in English) are the smallest administrative subdivision in Chile. They are individually governed by directly elected municipal councils, a single comuna may contain cities, towns, villages, hamlets as well as rural areas.³⁴¹

Conversation

I approach conversation from its most basic: “to live, dwell, live with, keep company with.”³⁴² How conversation unfolds and where it leads are dependent on a number of factors that contribute to the conversations overall context.

Curating

The act of organizing and facilitating artistic projects. My definition gains inspiration from the Independent Curators International who state: “We believe that curators create more than exhibitions — they are arts community leaders and organizers who champion artistic practice; build essential infrastructures, such as art spaces and institutions; and generate public engagement with art. Curators are, therefore, uniquely positioned to have an important impact on

³³⁸ Grant Kester, *Conversation Pieces: Community and Communication in Modern Art* (University of California Press, 2004), 130.

³³⁹ Bishop, *Artificial Hells*, 14.

³⁴⁰ Raven, Evert, and Eichhorn, *Biology of Plants*, 639.

³⁴¹ Wikipedia contributors, “Communes of Chile,” *Wikipedia, The Free Encyclopedia*, https://en.wikipedia.org/w/index.php?title=Communes_of_Chile&oldid=911496016.

³⁴² “Conversation, Origin and Meaning of Conversation,” Online Etymology Dictionary.

the artistic field, and on the communities they serve.”³⁴³ My practice engages with the role of curator as one of facilitator who can help to support artists, shape space for others’ voices to be heard, contribute to actively diversifying both artistic spaces and their audiences and provide opportunities for critical engagement with conversations that might not otherwise occur within artistic institutions.

Crisis

“The concept of crisis, which links threat, uncertainty, urgency, and stress, is particularly useful as the common denominator for a wide variety of phenomena, one of which is disaster.”³⁴⁴

Robert A. Stallings notes that although the term crisis is “loosely used colloquially as the term “disaster,” it conveys the same sense of being at a crossroads that an exception represents.”³⁴⁵

Despair

Similar to ‘hopeless,’ the feeling of despair is often spoken about with regard to the climate crisis, and I have been asked repeatedly how I handle feelings of despair when it comes to artworks engaging with issues related to climate change. I look to Robin Wall Kimmerer for insight: “Despair is paralysis. It robs us of agency. It blinds us to our own power and the power of the earth. Environmental despair is a poison every bit as destructive as the methylated mercury in the bottom of Onondaga Lake.”³⁴⁶

Disaster

The complex combination of hazards and social factors that lead to destructive results. The definition of disaster is necessarily multidimensional and, as E.L. Quarantelli notes, must remain adaptable.³⁴⁷

³⁴³ “About,” Independent Curators International (ICI), accessed June, 2019, <http://curatorsintl.org/about>.

³⁴⁴ Uriel Rosenthal, “Comments On Perry’s Comments,” in *What Is a Disaster? Perspectives on the Question*, ed. E. L. Quarantelli (London: Taylor & Francis, 1998. ProQuest Ebook Central), 230.

³⁴⁵ Rosenthal, “Comments On Perry’s Comments,” 227.

³⁴⁶ Kimmerer, *Braiding Sweetgrass*, 395.

³⁴⁷ Quarantelli, “Introduction,” xiv.

Disturbance

“Disturbance is a change in environmental conditions that causes a pronounced change in an ecosystem.”³⁴⁸

“Deciding what counts as disturbance is always a matter of point of view.”³⁴⁹

Ecology

“The English word *ecology* is taken from the Greek *oikos*, meaning “house,” our immediate environment. In 1870 the German zoologist Ernst Haeckel gave the word a broader meaning: the study of the natural environment and of the relations of organisms to one another and to their surroundings. Thus, ecology is the science by which we study how organisms (animals, plants, and microbes) interact in and with the natural world.”³⁵⁰

Ecosystem

“[O]rganisms and their physical and chemical environments together make up an ecosystem. We may speak of a forest ecosystem, a prairie ecosystem, and an estuarine ecosystem as distinct units because relatively little exchange of energy or substances occurs *between* these units compared to the innumerable transformations going on *within* each of them. Ultimately, however, all ecosystems are linked together in a single biosphere that includes all the environments and organisms at the surface of the earth.”³⁵¹

“All the interacting parts of the physical and biological worlds.”³⁵²

Elite Panic

The ways in which elites (politicians, those in control of the media, those with economic and or stakes of power within a community) create disproportionate levels of fear post-disaster as a way to deflect attention from underlying social problems and to further their own interests.

³⁴⁸ Tsing, *The Mushroom at the End of the World*, 160.

³⁴⁹ *Ibid.*, 161.

³⁵⁰ Ricklefs, *The Economy of Nature*, 1.

³⁵¹ *Ibid.*, 3.

³⁵² *Ibid.*, 542.

Failure

Failure in artistic practice is differentiated based on discipline. My approach to failure within this document focuses on its relationship to participatory practice, and is influenced by time, site, participants present, and overall context. It should be approached as an active contributor to the shaping of experience:

“A failure is just information.”³⁵³

“Failure is another word for experience.”³⁵⁴

Hazard

“Disasters are never natural in the ordinary sense because they always could have been avoided or mitigated by human choices. In this way of thinking, everything that we call a disaster started as a hazard, and hazards themselves are only risks, not harms. If and how hazards become disasters is shaped by governmental, infrastructural, and economic choices, conscious or unconscious. [...] This isn’t subtle; it’s what we mean by responsibility.”³⁵⁵

Holobiont

Organisms plus their persistent communities of symbionts.³⁵⁶

Mutualism

A biological interaction in which the growth, survival, and/or reproduction of both interacting species are enhanced.³⁵⁷

³⁵³ Rebecca Gross, “Toni Morrison: Write, Erase, Do It Over,” *The Art of Failure, The Importance of Risk and Experimentation*, National Council on the Arts 4 (2014): 2.

https://www.arts.gov/sites/default/files/nea_arts/NEA%20Arts_2014_no4_web.pdf.

³⁵⁴ Paulette Beete, “(National Medal of) Art Talk with George Lucas,” *National Endowment for the Arts* (blog), July 24, 2013, <https://www.arts.gov/art-works/2013/national-medal-art-talk-george-lucas>.

³⁵⁵ Charlie Loyd, “A Disaster of Our Own Making - California was always going to burn—but it should have happened differently,” in *The Atlantic*, 2018. <https://www.theatlantic.com/science/archive/2018/11/californias-disaster-is-of-our-own-making/576241/>

³⁵⁶ Scott F Gilbert, “Holobiont by Birth,” Chapter 4.

³⁵⁷ Raven, Evert, and Eichhorn, *Biology of Plants*, 638.

Necrocapitalism

A form of capitalism where a country's trade and industry are founded on, linked to and dependent directly or indirectly on death and the profits accruing from it.³⁵⁸

Neural Network

A neural network is defined by Dr. Robert Hecht-Nielsen, inventor of one of the first neurocomputers, as: "...a computing system made up of a number of simple, highly interconnected processing elements, which process information by their dynamic state response to external inputs."³⁵⁹

Network

"All the interacting parts of the physical and biological worlds."³⁶⁰

Panic

Clarke and Chess define panic as a breakdown in social order as the result of fear, which in turn can be responsible for creating more danger.³⁶¹

Patterns

I come to searching for patterns as a strategy for recognition and as a way to gain clarity within complex systems. As patterns emerge and are made visible across subjects, disciplines, and contexts, I seek out artistic strategies of engagement for further exploration and experimentation.

Populations

Many organisms of the same kind together constitute a population. Populations also have collective properties, such as geographic boundaries, densities (number of individuals per unit of area), and dynamic properties (for example, evolutionary responses to environmental change and periodic cycles of numbers in some cases) that are not exhibited by individual organisms.³⁶²

³⁵⁸ Singh, "The end of necro-capitalism."

³⁵⁹ "A Basic Introduction To Neural Networks," Department of Computer Science, University of Wisconsin Madison, accessed June 2019. <http://pages.cs.wisc.edu/~bolo/shipyard/neural/local.html>.

³⁶⁰ Ricklefs, *The Economy of Nature*, 542.

³⁶¹ Raven, Evert, and Eichhorn, *Biology of Plants*, 998.

³⁶² Ricklefs, *The Economy of Nature*, 3.

Publication

Pulling from Matthew Stadler, I come to thinking about publication as the creation of a public. Consisting of a multiplicity of actions, publication depends on participation.³⁶³

[The] Social

Within artistic practice a definition of the social “holds a myriad connotations at this moment: dialogue, collaboration, process, diversified audiences, democratic participation – with the spectre of socialism as a political analogue for all of this hovering uncertainly in the background.”³⁶⁴

“Art’s relationship to the social is either underpinned by morality or it is underpinned by freedom.”³⁶⁵

Strategy

Michel de Certeau differentiates between strategies and tactics, based on their proximity to dominant structures. A strategy is a “calculation (or manipulation) of power relationships that becomes possible as soon as a subject with will and power (a business, an army, a city, a scientific institution) can be isolated.”³⁶⁶

Succession

In ecology, the orderly progression of changes in community composition that occurs during the development of vegetation in any area, from initial colonization to the attainment of the climax typical of a particular geographic area.³⁶⁷

Symbiosis

When two or more dissimilar organisms live together in close association. Symbiosis includes both harmful (parasitism) and advantageous (mutualism) associations.³⁶⁸

³⁶³ Matthew Stadler, “What is Publication?”

³⁶⁴ Bishop, *Artificial Hells*, 206.

³⁶⁵ Thompson, *Living as Form*, 38.

³⁶⁶ de Certeau, *The Practice of Everyday Life*, 35.

³⁶⁷ Raven, Evert, and Eichhorn, *Biology of Plants*, 759.

³⁶⁸ Raven, Evert, and Eichhorn, *Biology of Plants*, 759 & 759.

Tactics

I come to consider *tactics* via Michel de Certeau, as pulling from larger systems while allowing for the unexpected: “It does not, therefore have the option of planning general strategy and viewing the adversary as a whole within a district, visible and objectifiable space. It operates in isolated actions, blow by blow. It takes advantage of ‘opportunities’ and depends on them, being without any base where it could stockpile its winnings, build up its own position, and plan raids.”³⁶⁹

Terrestrial

A concept devised by Bruno Latour. In contrast to the local which closes itself off, the Terrestrial is designed to open itself up: “For the Terrestrial is bound to the earth and to land, but it is also a way of worlding, in that it aligns with no borders, transcends all identities.”³⁷⁰ The Terrestrial holds the perspective of the up close and with it comes a new set of patterns that we need to learn to recognize.³⁷¹

³⁶⁹ de Certeau, *The Practice of Everyday Life*, 36.

³⁷⁰ Latour, *Down to Earth*, 54.

³⁷¹ *Ibid.*, 67 & 56.

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Appendices

Appendix 1 - Dossier: Documentation of Studio Practice

This dossier includes a list of artistic works developed and exhibited during my PhD studies (2016 through 2019). Complete artistic history and practice can be viewed online:

www.cbattle.com.

Artistic Projects - Ongoing



Figure 19. Documentation of *seeds for the end of the world* from the *i believe in living exhibition*, curated by Ellyn Walker for Untitled Art Society (Calgary), where seeds and zines were offered to guests to the gallery in the form of gifts, 2018. Image credit: Katy Whitt.

seeds for the end of the world (2015 - ongoing)³⁷²

seeds for the end of the world is an ongoing project where I grow, save and share seeds. Seeds take time to grow, to harvest, to prepare, and to share – an act that I see as gift as much as necessity and survival. As such, the seeds are offered as gift or by barter only, in an attempt to facilitate and support alternative systems of exchange. The title of the project isn't meant to evoke some apocalyptic future as propagated by the movies we watch, but to reframe what our expectations of 'the end of the world' might entail. *seeds for the end of the world* seeks to remind

³⁷² The title of this project changed after the writing of this document. I have left the original title throughout for the sake of clarity but it should be noted that, in the future, this project will be titled: *seeds are meant to disperse*.

that the end of this world is possible and that something different—something better—could replace it. As the seeds are gifted and grown they are meant to help others begin to build a world different from the trajectory it is currently on.

As an ongoing and forever growing project, I continue to adapt and rethink strategies as the work strives to be more aware of itself: of the ways in which it might help draw attention to food security & sustainability, species diversification, seed copyright, climate change, urban renewal, and anti-capitalist forms of exchange... Seeds are meant to disperse.

Through seeds and their dispersal, *seeds for the end of the world* actively thinks about both time and space differently, considering ecological change from the scale of the geologic and political change from the scale of the micro gesture.

* *seeds for the end of the world* zine (2018) is included as a pdf at the end of this document (see Appendix 3).

Exhibitions:

2019: “Reclaiming the invisible,” curated speaker’s event and special seed packs at the John and Maggie Mitchell Gallery at MacEwan University (Edmonton)

2018: “i believe in living,” curated by Ellyn Walker, Untitled Art Society (Calgary)



Figure 20. Video still from *Notes to Self*, C. Battle, 2014 ongoing.

Notes to self (2014 - ongoing)

Notes to Self is an ongoing series of videos documenting a simple, repetitive act as a way to mimic our fleeting engagement with social media status updates. Fragments of text, in the form of notes to myself, are set on fire with varying degrees of success. Unlike social media updates, the fate of these updates is controlled and finite, existing only for a few seconds before being completely destroyed. The notes, which range from humorous reminders and revelations to recollections about larger societal events, are simple in both form and execution, allowing for a critical and considered viewing response.

Exhibitions:

- 2019: “Creation : Destruction,” curated by Layne Hinton and Rui Pimenta, Nuit Blanche Toronto, Toronto,
 2019: Marshall McLuhan Salon at the Canadian Embassy, Berlin, for The Berlinale's Forum Expanded
 2017: BIG on Bloor Festival, Toronto, curated by Emily Fitzpatrick for Trinity Square Video
 2017: Echo Park Film Centres New Work Salon, Los Angeles, curated by Dicky Bahto
 2017: Experimental Response Cinema in Austin, Texas
 2017: “North of 49,” CFMDC's 50th anniversary, BIG on Bloor Festival (Toronto) (Ottawa)
 2016: Interference Archive in Brooklyn, NY, curated by NOW! Journal
 2016: McIntosh Gallery, London, ON, curated by Christine Negus
 2016: “Occupation(s),” curated by Erandy Vargas, Studio XX (Montreal)



Figure 21. Documentation from SHATTERED MOON ALLIANCE’s *On Time Travelling*, a workshop featuring guest speakers Natasha Myers and Ayelen Liberona. Part of the *Toolkit for Time Travel* project at YYZ Artists Outlet (Toronto), 2017.

SHATTERED MOON ALLIANCE (collaboration with Serena Lee, 2016 - ongoing)

SHATTERED MOON ALLIANCE is a living research project, taking the form of a series of workshops. The core focus of our collaborative research is to explore science fiction narrative worldbuilding.

Selected Projects:

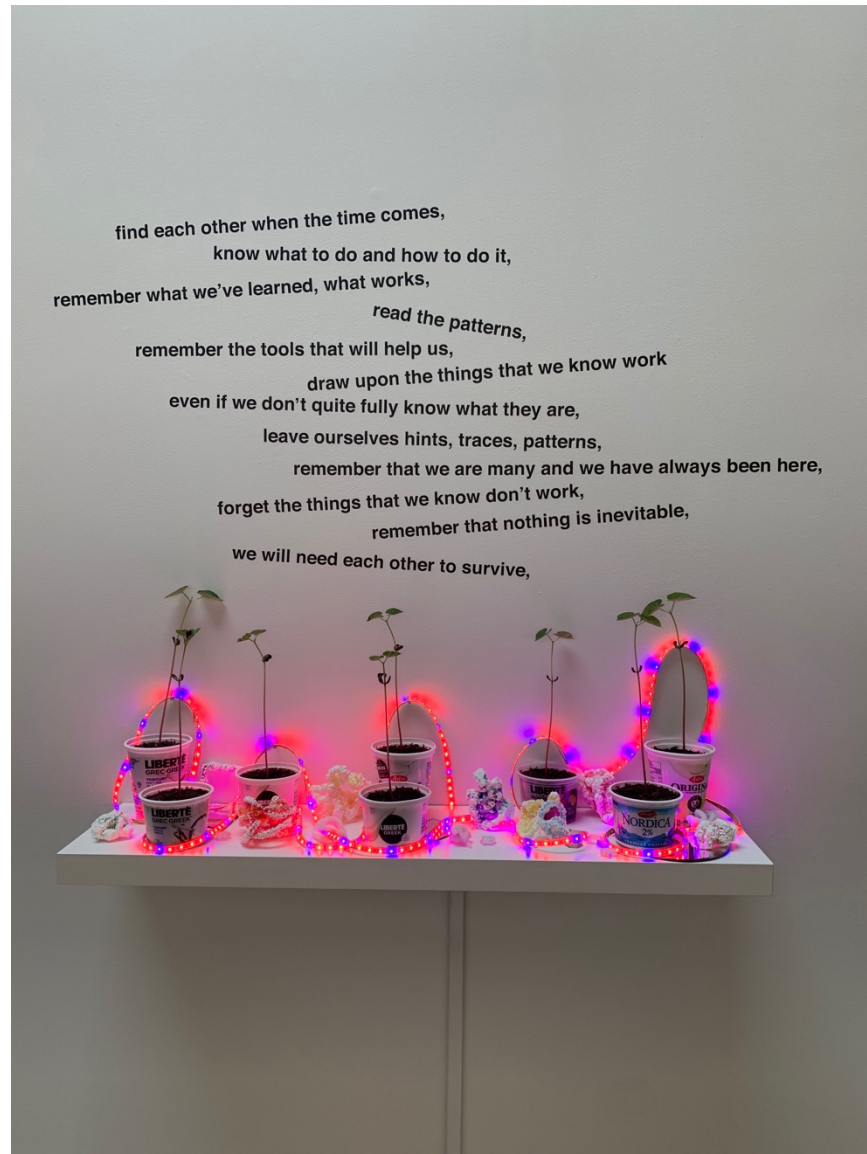


Figure 22. *Patterns Changing Patterns*, mixed media installation, SHATTERED MOON ALLIANCE, 2019. Image courtesy of Leila Armstrong.

Patterns Changing Patterns

Mixed media installation. Video projection, objects (salt dough, marbles, sea shells, glass), bean plants, recycled materials, text.

SHATTERED MOON ALLIANCE explores collaborative practice through the lens of sci-fi world-building that re-centres feminist perspectives. SMA finds its origins in a long-distance conversation manifest as a ‘transmedia publication’ - in other words, a stream-of-consciousness, non-linear, hyper-linked collage of pen-pal correspondence and gathering of ideas, images, research and references. Expanding on our ongoing thematic of time-travel, *Patterns Changing Patterns* manifests from conversations and experiments considering the political implications of displacement in time and space. Beginning with a set of constraints that embrace complexity and uncertainty as a strategy for world-building, this collaborative work is framed as a ‘toolkit’ for forming community regardless of distance, and as a potential for communicating across divides.



Figure 23. *The Future of Breathing*, a participatory workshop, with guest presenters Beverly Bain and Jamie Magnusson, SHATTERED MOON ALLIANCE, 2018. Image credit: Yuula Benivolski, Courtesy Blackwood Gallery.

The Future of Breathing - participatory workshop with guests Beverly Bain & Jamie Magnusson.

September 23, 2018 - 03:30 pm @ Blackwood Gallery's The Work of Wind Air Land Sea.
Curated by Christine Shaw.

Following a format of listening, doing, and reflecting, collectively we will consider breathing—and its variants—as necessary tools for time travel. Through discussion and hands-on exploration, we will imagine breathing in the future by considering how it is that we breathe (and

don't breathe) now. A series of questions we would like to explore together include: What have we lost over time in terms of our ability to breathe deeply? What are the politics of the substrates that we breathe? How does breathing relate to rest and how might we practice being able to breathe better? Who gets to breathe and how might we become more attuned to those who aren't able to? How might the act of breathing or not breathing be tied together with memory, consciousness and what is perceptible?

A number of guests will help to focus our discussion, including Beverly Bain, who will lead us in thinking through aspiration as both method and practice. Bain's work builds on the concept of aspiration developed by Christina Sharpe in her book *In The Wake: On Blackness And Being*. Aspiration focuses on metaphorically putting breath back into the Black female queer and trans bodies of those who have died, been killed, experienced police- and other forms of violence, and have survived that violence. We will discuss Bain's research alongside activities that bring attention to site-specific environmental data on the air we will be inhaling, and ways of breathing and walking as a generative and reflective practice. Jamie Magnusson will guide us through internal martial arts exercises in breathing to consider the "social body." We will engage with Magnusson's practice of community building and political work through "breath – work," and its potential to dismantle oppressive hierarchies and build toward new social relations.



Figure 24. *Toolkit for Time Travel*, mixed media installation, SHATTERED MOON ALLIANCE, 2018. Image courtesy of YYY Artists' Outlet.

Toolkit for Time Travel

YYZ Artists' Outlet [September 18, 2018 to December 1, 2018]

Reception and Participatory Workshop [October 31, 2018]

SHATTERED MOON ALLIANCE is a living research project that began as an online writing collaboration where we channeled our shared interest in contemporary and historical science fiction — cinema and literature — as a critical and reflective lens for political currents. We are not alone in our interest of sci-fi (aesthetics, narratives, and tropes) as a critical mirror of contemporary society that speculates alternative environments, systems, relationships, and ideologies. As a research project, SHATTERED MOON ALLIANCE exists to invite and include more voices in our ongoing conversation, so as to render the mirror more plural and complex in its [imaginative/speculative] potential.

Beginning in 2017, SMA hosted two participatory workshops at YYZ as part of our collaborative exploration of science fiction narrative worldbuilding. *On Time Travel* in Spring 2017, invited Jasmin Winter and Rayna Slobodian into the gallery to share their recent research with an intimate group of participants. Jasmin Winter spoke about recent research by Aboriginal Territories in Cyberspace (AbTeC), guiding us through new VR works by artist Skawennati that describe several Indigenous perspectives on time travel. Rayna Slobodian presented her research that looks critically at the colonization of Mars and the ongoing Space Race. In Winter 2017, for our second workshop *On Time Travelling*, guest speakers Natasha Myers and Ayelen Liberona presented their collaborative anthropological research and movement-based art installation *Becoming Sensor in Sentient Worlds*, followed by a guided meditation, all of which asked us to think differently about ecologies and anthropo-centric hierarchies.

Toolkit for Time Travel presents this research in the form of a transmedia publication that sits at the intersections of 'anthology,' 'recipe book' and 'tool-kit.' Stemming from the ethos that publishing is to call an audience, to create a public, to decentre and disperse authorship amongst a community through discourse in various formats and platforms, the publication engages with a series of questions that imagine the tools needed for time travel as a fait accompli, as a process, as an aspiration.

Recent Exhibitions:

2019: Patterns Changing Patterns, Center for Visual Art at MSU Denver

2018: Toolkit for Time Travel, YYZ Artists Outlet (Toronto)

2018: The Future of Breathing, The Work of Wind. Blackwood Gallery (Mississauga)

Artist Projects – 2019



Figure 25. *the view from here*, series of large scale billboards, C. Battle, 2019. Image credit: roaming-the-planet, courtesy of Capture Photography Festival.

the view from here

Large scale collage billboard project made for the Capture Photography Festival, curated by Jayne Wilkinson. [April 3 through 30, 2019, Vancouver].

the view from here is a series of large-scale billboards that consider strategies for imagining a future where we might better sense the digital infrastructure and global networks made invisible by the surface of the sea. Incorporating images from Google Earth taken from the very sites in which the works are installed, the series simultaneously collapses the constructed view of the image while also placing viewers within it. Speaking directly to passersby through a series of prompts, the work encourages a collective visualization of how the view from here might one day be different.

From Jayne's curatorial text, *Signals in the Sea*:

Christina Battle's images are the most directly related to their installation sites, demarcating a presence and immediacy connected to the oceanic and digital economies that serve Vancouver. In this new commission, *the view from here* (2019), Battle asks viewers and passers-by to consider how the digital infrastructure and global networks are obscured by the surfaces of the

sea. Even as ships fill the harbour and fibre-optic cables line the ocean floor, it is easy to ignore these economies in favour of the ocean's romance. Combining Google Earth-sourced imagery from the specific sites in which they are installed, contour lines suggesting various underwater depths, and lifeforms from an alien world, Battle creates a kind of feedback loop of visual regimes. The Twitterlength poetic texts prompt viewers to ask how they sense, feel, and understand proximity, encouraging a collective visualization of how the view from here might one day be different. As complex image composites produced with satellite imaging and mapping technologies, they remind us that the sea is literally a medium for sending and receiving signals and that it teems with contradictory messages. Environmental art historian T. J. Demos points out that in the visual culture of the Anthropocene (our current, human-defined geological epoch), a notable shift has occurred from photography to high-resolution satellite imagery and remote-sensing technology, scaled to global, even interplanetary measurement. Today, photography consists primarily of images that are automatic and constructed, not mimetic and indexical—Battle's collages tread in this terrain. Representation does not take the form of a single image, but is instead situated somewhere in the littoral space of an urban shore, within a technosphere that extends from the deepest parts of the ocean to the highest paths of atmospheric satellites.

Exhibitions:

2019: "Sensing Seas," curated by Jayne Wilkinson, Capture Photography Festival
(Vancouver)

Artist Projects – 2018



Figure 26. *Today in the news more black and brown bodies traumatized the soil is toxic the air is poison*, series of large scale billboards, C. Battle, 2018. Image credit: Toni Hafkenscheid, Courtesy of Blackwood Gallery.

Today in the news more black and brown bodies traumatized the soil is toxic the air is poison

Series of large scale collages installed on billboards made for the Blackwood Gallery's exhibition *The Work of Wind: Air, Land, Sea*, curated by Christine Shaw [September 14 through 23, 2018, Mississauga]

Today in the news more black and brown bodies traumatized the soil is toxic the air is poison is both title and starting point for this billboard collage project made specifically in response to *The Work of Wind: Air, Land, Sea*'s appropriation of the Beaufort Scale of Wind Force. The work uses the scale as the underlying structure of its overall narrative, proposing that we are currently at the peak of the scale—stuck at 12: Hurricane—and asserting that we must find strategies to move ourselves back toward 0: Calm as a necessity for any possible future. Rooted within the understanding that we are at a critical impasse where multiple imbalances within our society—climate change, global capitalism, infrastructural governance, environmental racism—are inherently entwined, *Today in the news more black and brown bodies traumatized the soil is toxic the air is poison* proposes that the potential ways forward are limited: we either continue on as we are, forever caught within the hurricane, or follow a new, alternate path that will help us escape a never-ending loop. The 13 billboard collages punctuate the perimeter of the entire exhibition area and begin to mark out the path.

Exhibitions:

2018: “The Work of Wind: Air, Land, Sea,” curated by Christine Shaw, Blackwood Gallery (Mississauga, ON)



Figure 27. Video still, *Water once ruled*, single channel video, C. Battle, 2018.

Water once ruled

6.14 minutes, Single channel video loop originally made for “contact landing(s),” curated by Ellyn Walker

Collaging appropriated footage with original imagery, *Water once ruled* collapses the past, present and future into a single repeating loop. Linking the introduction of satellite imagery with the colonization of our own as well as other planets, the video considers water – and the lack there of – as the distressed resource connecting Mars’ history with Earth’s present and future.

There is nothing here to breathe.

Exhibitions:

2019: “The Floating World,” Antimatter [Media Art] (Victoria, BC)

2019: “Eschatological Autopsy: The Act of Seeing the End of the World with One’s Own Eyes,” curated by Shahbaz Khayambashi, Vector Festival/Pleasuredome (Toronto)

2019: “Composthumanism,” curated by Hope Peterson, Pleasuredome (Toronto)

2019: “Sensing Seas” curated by Jayne Wilkinson, Capture Photography/DIM Cinema (Vancouver)

2018: “contact landing(s),” curated by Ellyn Walker, Thames Art Gallery (Chatham, ON)

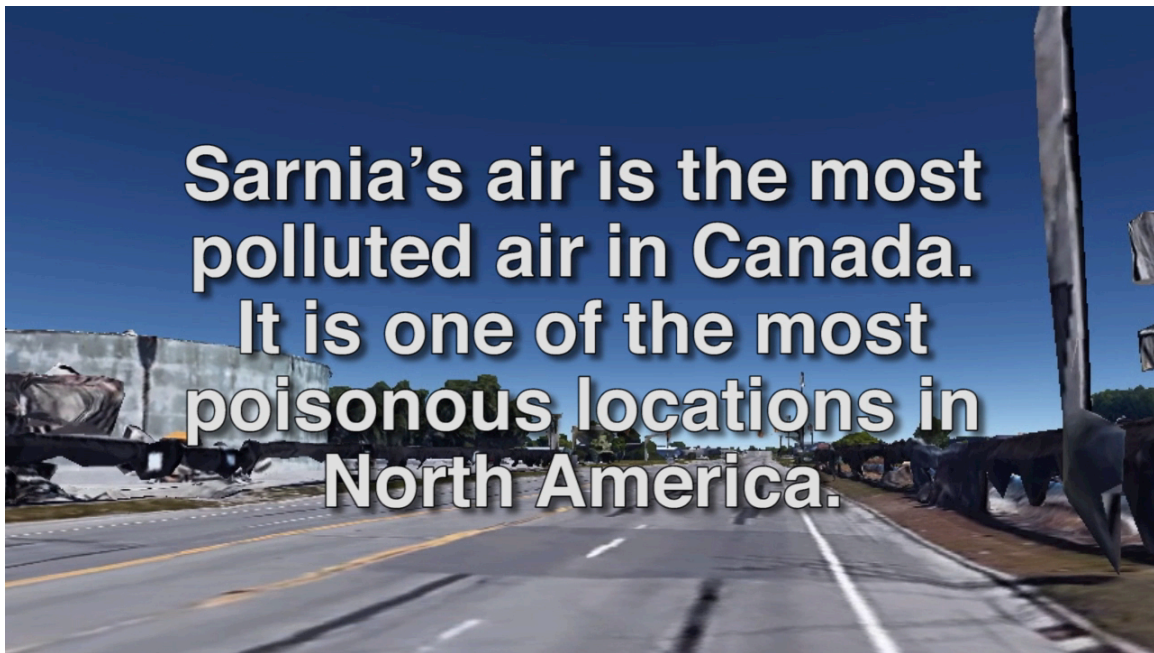


Figure 28. Video still from *BAD STARS*, multi-video installation & vinyl prints, C. Battle, 2018.

BAD STARS

Multi-screen installation (video loops, vinyl + discursive programming)

Made for Trinity Square Video – May 4 – June 9, 2018 in collaboration with Contact Photography Festival. Curated by Emily Fitzpatrick

Beginning with the root of the term disaster – from the Greek (*dus-*) ‘bad’ and (*aster*), ‘star’ this project considers disaster from an astronomical sense, imagining multiple scales of disaster as causing disruption and temporary disorientation on a planetary scale. Humans have looked to the movement of stars as a way to make sense of the terrestrial for millennia, developing elaborate systems to read celestial bodies as a way to explain and predict events on earth. Studying the stars in order to discover more about the galaxy, astronomy tells us that we are in fact born of the stars, made up of the heavy elements they distribute across the universe. *BAD STARS* considers disaster through the metaphor of those stars that have gone wrong—as events that cause unprecedented change from a once-stable structure, and influence a wider, interdependent network.

Seeing warnings about past disasters as a way to bypass potential disasters of the future; and considering disaster as a series of linkages extending from the environmental, cultural, political, economic, and social, *BAD STARS* draws threads between these connections and wonders how they might be realigned in ways that will help to move beyond them. The project sees the framework of disaster as an active strategy that can aid in the shifts in perspective necessary to advance beyond the causes of disasters themselves.

BAD STARS invites an interdisciplinary group of contributors to help forward the discussion, beginning with the invitation to contribute to a wall of photographic imagery included in the exhibition. Representing a variety of disasters from a number of perspectives and scales, the contribution of images aids in the widening of our considerations as to what constitutes a disaster while also providing context for the development of additional programming.

Furthering established research in social sciences about how communities behave in times of disaster, Rebecca Solnit's *A Paradise Built in Hell* provides a number of historical examples of how the social is enacted after catastrophic events; illustrating that in general, individuals are overwhelmingly altruistic in post-disaster situations: "Disaster may offer us a glimpse, but the challenge is to make something of it, before or beyond disaster: to recognize and realize these desires and these possibilities in ordinary times."³⁷³

Through the creation of space for dialogue, and by bringing people together who otherwise might not, BAD STARS pulls from the framework of the post-disaster neighbourhood considered by Rebecca Solnit. Making room for those from various disciplines to come together for shared conversation and experience, programming invites those actively researching and working to tackle issues of disaster into the space of the gallery. By inserting the opportunity for conversation and the introduction of diverse perspectives and ideas, within this discursive programming lies the possibility for the reshaping of current systems and the aversion of potential disasters to come – a hopeful first step in ushering in real structural change.

An interdisciplinary group were invited to help forward the discussion by contributing to a wall of photographic imagery included in exhibition: Leila Armstrong, Ana Barajas, Dorothy & Jim Battle, Scott Miller Berry, Michele Pearson Clarke, Giselle Dias, Adán De La Garza, Lanny DeVuono, Serena Lee, Jeanne Liotta, Patrick Mahon, Kirsty Robertson, Juli Saragosa, and Meredith Tromble.

Exhibitions:

2018: Trinity Square Video in collaboration with Contact Photography Festival, curated by Emily Fitzpatrick

In the Garden

The *In the Garden* series consisted of two events where community members were invited to sit in the garden and get to know one another while engaging with plants grown from the *seeds for the end of the world* project. Together we pressed flowers, made sun prints, documented the garden in water colours, made hand sewn lavender sachets and considered the ways in which plants might help bring us together.

³⁷³ Rebecca Solnit, *A Paradise Built in Hell*.



I spend a lot of time watching my garden, trying to get a handle on how I might make minor adjustments to help species thrive.

I've been thinking about the act of observation --- I think 80% of growing and tending to things comes down to taking the time to sit and watch --- and recalling how one of my favorite parts of biology labs was having to spend time looking at specimens and drawing them as a part of the identification process.

This summer I'm getting back to the act of watching, identifying, drawing and pressing flowers that are popping up in my garden and I'd like to invite you to join me.

Bring a notebook, some pencils or watercolors, and a heavy book to transport your pressed flowers home with you; bring a friend (and an extra chair)* and hang out with me in the garden on **Thursday, June 28, 2018** from **4pm to dusk** as we watch, identify, draw** and press flowers together.

I will have some materials to share: pencil crayons; paper; water colors; identification tools; examples of scientific illustrations available for inspiration (as well as snacks and drinks of the iced tea and sparkling summertime variety available).

Hoping this will be the first in a summer long series of intimate get togethers for conversation and observation of the plants and flowers and insects inhabiting my backyard.

Christina
1289 York Street
London

* let me know if you can/can't make it &/or plan to bring someone - space is kind of limited

** No drawing skills necessary! (I literally have none!)

*** if it looks like rain I'll send thru a make up date

Figure 29. Invitation for *In the Garden series*, June 28, 2018



I've been thinking about how the flowers and plants and fruits and veggies in the garden are put to use; and how it is that I often seek out projects in order to find new uses for things as they grow to maturity.

Lavender, *Lavandula angustifolia* (specifically the English lavender variety) has a variety of uses that have been documented for thousands of years. Cultivated as an oil, the flowers have disinfectant, antiseptic and anti-inflammatory properties and can even be used as a mosquito repellent; when dried they can be used in cooking. Known for its sweet aroma, lavender is often used in perfumes, lotions, cosmetics and air fresheners.

I'd like to invite you to join me on Saturday, August 4th, 2018 from 3pm to 6pm for an afternoon of hanging out in the garden with a special focus on the amazing lavender that has been blooming of late. Together we will harvest lavender to dry and hand sew small sachets that can be taken home to later fill. It's a chance for you to capture and save the amazing smell of lavender all year long!

No sewing skills necessary and I will provide all necessary materials. I will have snacks available to help us get in the lavender mood. Please BYOB (I will have some seasonal teas made from the garden as well as a modest amount of wine for summertime spritzery drinks).

Space is limited (as well as materials) so please let me know if you can or cannot make it.

This is the second event in the garden this summer and there will be at least one more, so if you're not able to join in on this round there will be another chance!

happy summer,

christina

1289 York Street

London

Figure 30. Invitation for *In the Garden series*, August 4, 2018

in the garden (one) - zine
london, ontario, summer 2018

**included as pdf at the end of this document*

Artist Projects – 2017



Figure 31. *the future is a distorted landscape*, multi-screen installation, C. Battle, 2017. Image by Henry Chan, courtesy of Nuit Blanche Toronto.

the future is a distorted landscape

multi-screen installation, series of animated gifs, originally commissioned by Nuit Blanche Toronto 2017 for *Calculating Upon the Unforeseen* curated by Clara Halpern

Science fiction often suggests alternative visions for society. This multiscreen video installation takes up time travel as a political act and a way to draw attention to the failings and inequalities embedded within contemporary life.

Chronesthesia, or mental time travel, refers to the brain's ability to remember the past while imagining the future. In essence, chronesthesia allows us to visualize the future based on our previous experiences. The more exposure we have to an experience or a particular type of event, the more likely it is that we can imagine and realize a similar event in the future. The recent discovery of gravitational waves by a team of astrophysicists in Louisiana makes the fantasy of time travel seem possible, even if not within our lifetimes. The knowledge that it might be possible to escape from the struggles unfolding worldwide (climate change, capitalism, inequality, nuclear war, racism...) offers much needed hope. This project proposes that visualizations which imagine what the future might look like, both good and bad, could offer a way to encourage the collective creation of a better one.

Exhibitions:

2018: Deluge Contemporary, curated by Deborah de Boer (Victoria, BC)

2018: “Forward Motion,” curated by Noa Bronstein, Small Arms Inspection Building (Mississauga)

2017: “The More I Look at These Images,” 8-11 (Toronto)

2017: “Calculating Upon the Unforeseen,” curated by Clara Halpern, Nuit Blanche (Toronto)

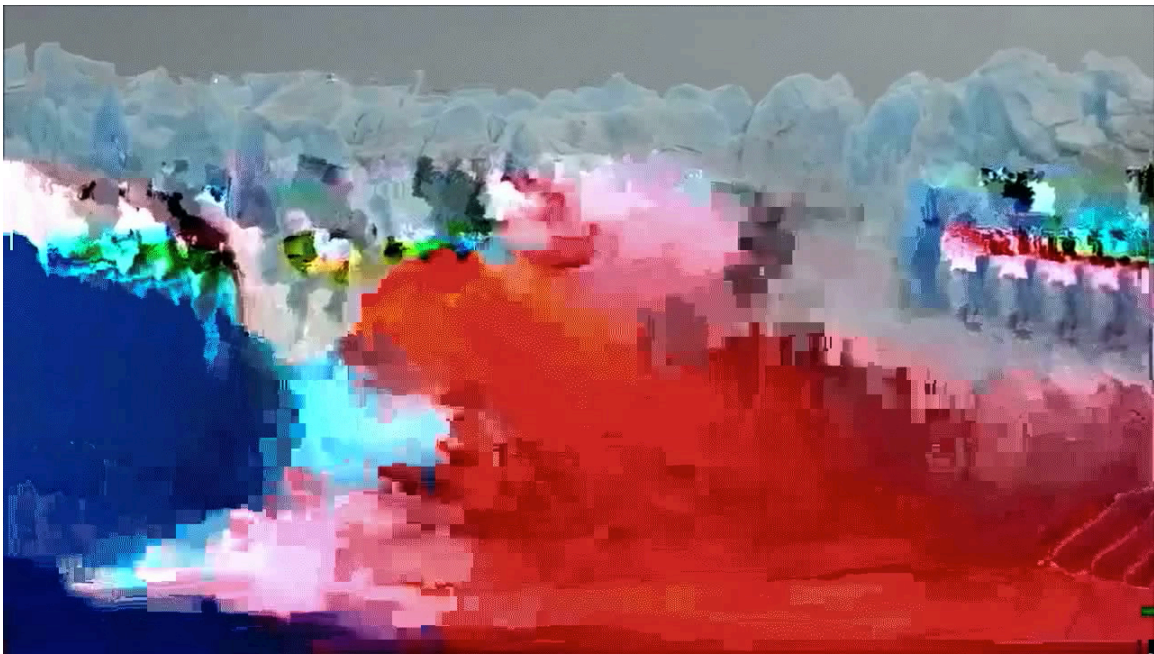


Figure 32. Video still, *the future is a distorted landscape [version one]*, series of animated GIFs, C. Battle, 2017.

the future is a distorted landscape [version one]

three animated gifs

the future is a distorted landscape [version one] considers how our expectations for the future are transmitted and facilitated through digital media. Consisting of multiple animated gifs, the work imagines a future mediated through the lens of social media, itself manipulated, distracted, policed, distorted and riddled with conspiracy.

Exhibitions:

Satellite Project Space: “You Can’t Steal a Gift” (London, ON)

Artist Projects – 2016

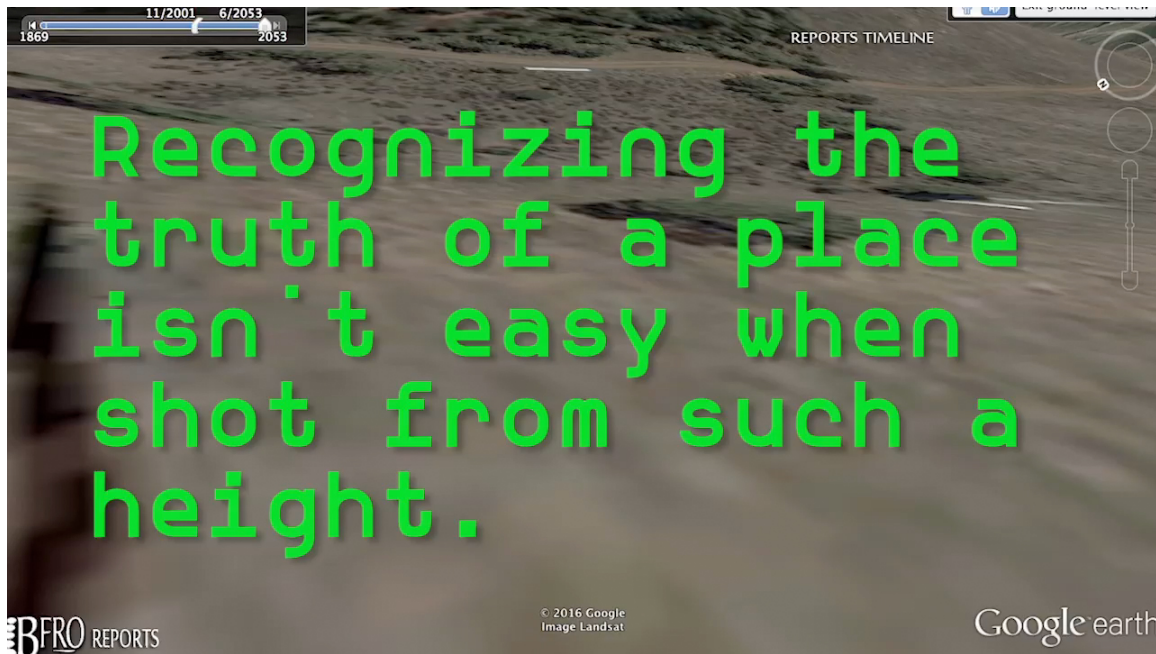


Figure 33. Video still, *Tracking Sasquatch (field report #4)*, single channel video, C. Battle, 2016.

Tracking Sasquatch (field report #4)

8.25mins, single channel video

A search for the elusive Sasquatch. The fourth chapter in an ongoing series. “The more a thing deviates from the known, the better the proof of it’s existence must be.”

With text generated, sourced and scoured from various articles and essays found on the internet.

More about the Tracking Sasquatch Series:

*A google search for ‘Bigfoot videos’ returns ‘About 57,800,000 results.’**

Our collective interest in a creature whose existence hovers at the fringes of science yet remains at the forefront of our popular conscious fascinates me. With sighting videos uploaded and shared to YouTube on a daily basis – both as legitimate attempts to share sighting experiences and obvious tongue-in-cheek hoaxes – its clear that we are captivated by the myth of the elusive creature and that some part of us wants them to be real. The ways in which individuals use the moving image to document and falsify sightings of cryptids and other unexplained phenomenon is of special interest to me. From the first and still undisputed film documenting Bigfoot’s existence (The Patterson film, 1967) to the hundreds of sightings videos people share on YouTube everyday, I wonder how our notions of evidence for such unknowns might change as

the accessibility and capabilities of video increase. In today's media-saturated world what does 'seeing it to believe it' really mean? With so many videos now a part of our collectively constructed archive I wonder about the role such videos play within the historical record, regardless of their proximity to fact or fiction. Considering the dichotomy between official (government) and unofficial (documented by individuals) archives of unexplained sightings, I wonder what makes one archive more valid than the other. I'm interested in considering what is left out from official records and how the subjective nature of the official not only changes our contemporary understandings of the past but also how it might shape the historical views of future generations.

The *Tracking Sasquatch Series* is an ongoing research project considering some of these ideas. Through moving image the short works exploit narrative structures and techniques that are often used to situate documentations of sightings as truthful. Pulling from strategies used in horror movies the films and videos play on the unique qualities that moving images hold in playing on our sense of anticipation and belief.

*google search – 03/05/2013 at 8.56 AM

Exhibitions:

2018: DOXA Documentary Film Festival (Vancouver)

2018: "Screening Space," part of Spiral Film and Philosophy Conference 2018 –
Thinking Space (Toronto)

2017: Other Cinema, curated by Craig Baldwin (San Francisco)

2016: Antimatter [MediaArt] (Victoria)

Additional Screenings & Exhibitions:

- 2019: “The Face of the Planet,” curated by Jennifer Peterson, Anthology Film Archives (NYC)
- 2019: “Not Really Now Not Any More,” curated by Erik Martinson, (Oslo, Norway)
- 2018: “THE HEX IS ON,” White Water Gallery (North Bay, ON)
- 2018: “In this place where the guest rests,” curated Jacqueline Mabey, Franklin Street Works (Stamford, CT)
- 2017: “UNSTEADY GROUND,” curated by Kelly Sears, Galveston Artist Residency (Texas)
- 2018: Fabulous Festival of Fringe Film, curated by Jaclyn Quaresma + Elijah Lin (Durham County ON).
- 2017: MuMa Le Havre (Musée d'art moderne André Malraux) (France)
- 2017: “F*uk Tr*mp” Experimental Response Cinema (Austin, TX)
- 2017: Echo Park Film Centres New Work Salon (Los Angeles)
- 2017: NOW! A Journal of Urgent Praxis (online)
- 2017: VISIONS screening series (Montreal)
- 2017: “UNSTEADY GROUNDING” Galveston Artist Residency, curated by Kelly Sears (TX)
- 2016: CONTRE COURANT – Experimental Film Festival (Montreal)
- 2016: “Shut it Down,” curated by NOW! Journal, Interference Archive (Brooklyn, NY)

Curatorial/Organizing/Facilitating - 2019
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When the frame slips, someplace between tomorrow and yesterday, a program curated for the Fabulous Festival of Fringe Film, Durham, ON, Saturday, July 20th.

Using strategies unique to time based media, artists in *When the frame slips, someplace between tomorrow and yesterday* work in intimate ways to construct reflections of the world on a global scale. As a whole, the program points toward the complexity of our given moment, focusing on the links between the environment, the land, colonialism, war, extraction and oppression. By turning to their cameras, and using both formal and conceptual constraints, artists in the program ask us to look closer to how we engage with the land and with one another, and to consider how it is that we might look at these relationships again and anew. Each of the works in *When the frame slips, someplace between tomorrow and yesterday* utilize strategies unique to time based media and through structural, material and narrative means help us to imagine the future differently:

Inside a cracked foundation
 The pixels blur.
 In the garden
 Past the full blooms.
 In the sea
 Time stutters and repeats.
 In the backyard
 A camera shakes the leaves on a tree.
 Rewind.
 Fast-forward again.
 In a field
 A fire burns.
 In the desert
 The sun shimmers in a barrel of water.
 In the street
 A red flash
 When the revolution comes.

When the frame slips, someplace between tomorrow and yesterday includes works by: Parastoo Anoushahpour, Faraz Anoushahpour, & Ryan Ferko, Dan Browne, Terra Long, Lydia Moyer, Metrah Pashae, and belit sağ.

Re-Joyce: Wieland for a New Millennium in Toronto April 4th thru 6th. Featuring artists and presenters: Kiera Boulton, Aylan Couchie, Thirza Cuthand, Russ Diabo, Brette Gabel, Lee Maracle, Ryan McMahon, Hazel Meyer, MICE Magazine, Kirsty Robertson, Lisa Robertson, Aram Han Sifuentes, and Indu Vashist. Co-curated by: Christina Battle, Amy Fung, Allyson Mitchell, and Ariel Smith.

Curatorial/Organizing/Facilitating - 2018

There's something in the way

an exhibition curated for the Cold Cuts Video Festival (Dawson City, Yukon)

March 30 through April 1, 2018

There's something in the way looks at the ways in which artists use the tools of video to stage and frame complex subjects. Moving beyond solely framing the camera lens, works in the exhibition also play with time, space and montage as they frame (and reframe) bodies, histories and memories.

With works by: Association for Decentering Landscapes [Rouzbeh Akhbari, Felix Kalmenson, and Ash Moniz]; Tanya Lukin Linklater; Amanda Boulos; and Liz Knox.

Curatorial/Organizing/Facilitating - 2017

ECOCREATIVITY: Bringing Art & Biology Together in Conversation organized by Christina Battle and Michelle Wilson. Dr. Sheila M. Macfie and Dr. Danielle Way, Department of Biology, whose research focuses on plant responses to global change present their research at the Artlab Gallery. After the talk an organized tour of Western's Biotron environmental growth chambers took place.

What is Left? What is Right? Video Screening and presentations, a program curated for Forest City Gallery, London, ON.

With similar concerns of representation and identity raised in the gallery exhibition, artists in the *What is Left? What is Right?* video program exact these concerns in differing ways. Exploring and challenging the elements of narrative and performance, artists in the screening are able to utilize the structures of storytelling and performance to add layers and complexity to these multifaceted issues. A snapshot of ways in which Canadian artists visualize these issues, the works in *What is Left? What is Right?* challenge us to consider the complexities of time, space, histories, and land as we make sense of how matters of identity are not only formed but also how they continually shift.

Featuring a presentation and conversation with Serena Lee and Kirsty Robertson; performance by Sâkihitowin Awâsis and video works by: Stephanie Comilang, Taylor Doyle, Helena Martin Franco, Katie Kotler, Karilynn Ming Ho, Caroline Monnet, Zinnia Naqvi, and Dainesha Nugent-Palache.

What is Left? What is Right? editor of Digest Volume 2 Publication for Forest City Gallery, London, ON. Publication features texts and artist projects by: Sâkihitowin Awâsis, Christina Battle, Christie Dreise, Marina Fathalla, Serena Lee, Dainesha Nugent-Palache, Jenna Faye Powell, Karalyn Reuben, and Ruth Skinner.

What is Left? What is Right? co-curated exhibition for Forest City Gallery, London, ON. Exhibiting artists include Florence Carlyle, Leila Fatemi, Davita Guslits, Rachel Hahn, Sara Hartland-Rowe, Jamelie Hassan, Tsēma Igharas, Serena Lee, Maegan Rose Mehler, Pitseolak Ashoona, Angie Quick, Karalyn Reuben and Winnie Truong.

At the start of every disaster movie there's a scientist being ignored, a workshop/participatory event with Kelly Jazvac to coincide with her Proof of Performances exhibition at Gallery TPW in Toronto.

VISIONS OF A POTENTIAL FUTURE, curated for Echo Park Film Center's MARVELOUS MOVIE MONDAYS, their weekly online-only screening series where a different artist takes the helm each month to spin flicks on the EPFC Facebook page each Monday.

In October, 2016 online publication *The Intercept* obtained a video made by the Pentagon for an internal military audience. The 5 minute video, titled “Megacities: Urban Future, the Emerging Complexity,” presents a view of the future, specifically of global cities: “The video is nothing if not an instant dystopian classic: melancholy music, an ominous voiceover, and cascading images of sprawling slums and urban conflict. ‘Megacities are complex systems where people and structures are compressed together in ways that defy both our understanding of city planning and military doctrine,’ says a disembodied voice. ‘These are the future breeding grounds, incubators, and launching pads for adversaries and hybrid threats.’”

Used by the Pentagon’s *Joint Special Operations University* as a training guide against “The Emerging Terrorism Threat,” the video gives us a clue into just how our militaries are preparing for the future. From *The Intercept*: “‘This is the world of our future,’ warns the narrator of ‘Megacities.’ ‘It is one we are not prepared to effectively operate within and it is unavoidable. The threat is clear. Our direction remains to be defined. The future is urban.’”

This is where we begin. Throughout the month of February, as part of Echo Park Film Centre’s Marvelous Movie Mondays, I will present three alternative visualizations of what the future might look like as proposed by media artists. I see visualizing the future as a strategy for creating it – a way to see the potentials for how it might be, how it could be, and to help us to imagine strategies that might make it better. And, as it is no doubt clear from your various social media feeds, we need alternative visualizations now more than ever.

With notes from: Nick Turse, “Pentagon Video Warns of “Unavoidable” Dystopian Future for World’s Biggest Cities,” *The Intercept*, 13 Oct. 2016.

Video #1: Megacities: Urban Future, the Emerging Complexity; Video #2: AFROGALACTICA- A brief history of the future (teaser), Kapwani Kiwanga; Video #3: 2026, Maha Maamoun, Video #4: THE FUTURE WAS DESERT PART ONE, Sophia Al-Aaria.

Curatorial/Organizing/Facilitating - 2016
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re:assemblage, co-curator with Scott Miller Berry from 2016 thru 2018. The re:assemblage collective is committed to championing underrepresented voices and perspectives through public film/video screenings. We are itinerant and intentional. We are "reassembling" assumptions about artist film/video practices: who is shown and the forms of works championed. We are inspired by Trinh Minh-ha's film *Reassemblage*.

Screenings:

Zone Zero, a documentary by Farzad Moloudi, at Trinity Square Video in Toronto, January 4, 2017 at 7pm.

AUDIENCE EMANCIPATED: THE STRUGGLE FOR THE EMEK MOVIE THEATER by the Emek Bizim İstanbul Bizim Initiative with THE HARRIS PROJECT by Marcos Arriaga & Jeff Sterne at Trinity Square Video in Toronto, Friday, March 17, 2017 at 7pm.

AUDIENCE EMANCIPATED: THE STRUGGLE FOR THE EMEK MOVIE THEATER by the Emek Bizim İstanbul Bizim Initiative at a Social Emergency Response Center at the Bookcase Micromuseum & Library in London, ON, Wednesday, April 12, 2017.

JOURNEY'S THROUGH, a screening of short videos at Good Sport in London, Ontario. With works by Pham Ngoc Lan [Vietnam], David Darmadi [Indonesia] and Francois Knoetze [South Africa], – Thursday, May 25, 2017.

JOURNEY'S THROUGH, a screening of short videos at YYZ Artists' Outlet in Toronto. With works by Pham Ngoc Lan [Vietnam], David Darmadi [Indonesia] and Francois Knoetze [South Africa]. Wednesday June 21, 2017.

Part of the BAD STARS exhibition at Trinity Square Video. Works by Florencia Levy [Argentina] + Midi Z [Taiwan/Myanmar]. Saturday, June 9, 2018.

I'm Really a Witch.*

a screening curated for LOMAA.

“If you are a woman and dare to look within yourself, you are a Witch. You make your own rules. You are free and beautiful. You can be invisible or evident in how you make your witch-self known.”**

The contemporary image of the witch, one that has reclaimed its original identity of female power and body, has seen a rise within popular culture fuelled by a strengthening of feminist perspectives within society at large. This shift in cultural reference from that perpetuated since the 15th century has been appropriated by Hollywood with representations of witches as strong female characters – consider American Horror Story's third season *Coven* (2013) whose overall theme of “girl power” contributed to the further popularizing of this updated image. This

reclaimed identity is not new to artists and those identifying with perspectives tied to witchcraft enact a deliberate attempt to empower.

Works in *I'm Really a Witch*. * position perspectives of witchcraft and the occult within a strong feminist politic. The program includes works by: Christina Battle, Laura Conway, FASTWURMS, Rachel McRae, Nicole Rayburn, Leslie Supnet, and Gwen Trutnau. Preceded by an episode from the web series *Bwitches* (Johanna Middleton & Martine Moore).

* The program's title "I'm Really a Witch." references a tweet by rap/pop star Azealia Banks on January 8, 2015. As noted in an article by Sady Doyle: "...simply by calling herself a witch in public, Banks had managed to evoke real fear. Rightwingers treated her as if she were actually planning to blight crops and hex her enemies, all the while claiming that they didn't believe in witchcraft." [Doyle, Sady. "Season of the Witch: Why Young Women Are Flocking to the Ancient Craft." *The Guardian*. Guardian News and Media, 24 Feb. 2015. Web. 05 May 2016.]

**from a pamphlet for New York Covens of W.I.T.C.H. [cited from: *The Occult Activism of 1960s Group WITCH is Still Relevant* By Ashera Buhite – May 1, 2016]

Publications About My Work:

"Profiles on Practice: Christina Battle," by Nadia Kurd for *Femme Art Review*.
<https://femmeartreview.com/2019/08/28/profile-on-practice-christina-battle/>

"Mediated Disaster and Unmediated Climate Anxiety, A Conversation with Christina Battle and Jayne Wilkinson," by Jayne Wilkinson. In *Other Places: Reflections on the Media Arts Practices in Canada*, edited by Deanna Bowen, *PUBLIC Journal*, forthcoming fall 2019.

"Review: Notes to Self by Christina Battle – part of Forum Expanded, Berlinale," by Esmé Hogeveen for *Another Gaze*.
<http://www.anothergaze.com/review-notes-self-video-installation-christina-battle-forum-expanded-berlinale/>

"With burning patience. Christina Battle exhibits at the Berlinale (Forum Expanded) at the Canadian Embassy," by Andreas Hagemoser [in German]
<https://kulturexpresso.de/mit-brennender-geduld-christina-battle-stellt-auf-der-berlinale-forum-expanded-in-der-kanadischen-botschaft-aus-unbedingt-sehenswert-eintritt-frei/>

"A Year in Contradictions," *Canadian Art Magazine* online, by Jayne Wilkinson, 2018
<https://canadianart.ca/features/a-year-in-contradictions/?fbclid=IwAR31B3wvB4QjMUmWBtKK9dRgDOOuTXP3qULW5M8Duev9pDprH3qi5ENdOD0>

"Bad Stars," *Canadian Art Magazine* online, by Heather Davis, 2018
<https://canadianart.ca/essays/christina-battle-bad-stars/>

Review of the group exhibition “The More I Look At These Images” at 8-11 Gallery (Toronto)
by Terence Dick for Akimblog, 2017 <https://akimbo.ca/akimblog/?id=1308#>

Appendix 2 - seeds for the end of the world, zine, 8.5" x 5.5," 24 pages, 2018





Why I Save Seeds

Gardening has always been an important part of my life. Half of our backyard was a garden growing up (until my mom got fed up of our 'do good' neighbour constantly spraying our garden with unwanted pesticides) and my grandma made gardening an important part of her day to day life. Through her I learned about the importance of recycling and reuse, the value of growing your own food, and the importance of paying attention to the seasons.

There are so many good reasons to garden but in today's climate of food scarcity and corporatism, I think equal, if not more importance, should be placed on the saving and sharing of seeds. Saving your own seeds and sharing them with others operates in direct opposition to the industry standard of copyrighting and restricting seeds while ensuring a wide range of varieties remain viable.

The *seeds for the end of the world* project began in 2015 within this spirit of saving and sharing seeds with others. Not so much a project as a part of life (where does life end and project begin?), throughout each season I would save, process and then share seeds with friends. My initial intention was to exchange the seeds with others for similar goods – a sort of bartering system of exchange. But in the end I opted to gift the seeds to others who I thought would appreciate them. I think of the seed packs as part of a survival kit for the future – a future that I hope has shed the cruelty and inequality resulting from capitalism for an alternative that is more humane. Considering the corporatization dominating the food we consume and the ways in which we produce it, and as issues of food security continue to magnify, the project seeks to encourage a reclamation of the ways in which we engage with food and to encourage others to put the production of the things they eat into their own hands.

In today's reality of ever shifting climates and unpredictable weather, though, it's hard to know just what seeds will remain viable and productive from season to season. When I started my current garden here in Southwestern Ontario for example, I made sure to plant as many native species as I could, wanting to contribute to the creation of healthy spaces throughout a city in a region that was new to me. But when that first summer turned out to be one of drought and the native species couldn't keep up, I started to wonder how to best prepare for this rapidly changing environment – what seeds I should be saving and sharing with others and how to best plan my gardens in the future?

This zine contains some of that research, with hopes that sharing the knowledge will prompt you to investigate and think critically about how your own gardens might thrive in future climates. A number of these texts were initially written for the *Seed Sower*, the newsletter of the community garden I was part of in Denver, Colorado during the summers of 2014 and 2015.

More about the *seeds for the end of the world* project along with links to relevant articles are available online:
<http://cbattle.com/seeds-for-the-end-of-the-world/>

-- Christina Battle, March 2018



Over the last century, a staggering 75 percent of the world's crop diversity has become extinct.



Most of the seeds you buy from the store are patented – not just for different types but also for specific traits like resistance to disease, and visual qualities like the colour or curliness of leaves. Patents of this sort have increased over the years and encroach on the growing range of a variety of crops. This tendency should make us concerned about the food security and the future of food production.

Check out the Open Source Seed Initiative to learn more! <https://osseeds.org>

A Few Reminders as to Why I Garden

First printed in the Seed Sower [August 2014]

One of the most practical reasons why I garden is a financial one. On average our food travels between 1,500 and 2,000 miles to get to our plates¹ and with food prices inherently tied to the forever-rising oil and gas prices, gardening allows me to eat diverse and organic produce at a fraction of the cost. As the distance food travels decreases, so does its contribution to fast-growing greenhouse emissions and the need for processing and refrigeration. Every ounce of food we produce for ourselves contributes to the reduction of our carbon footprint by shortening the path from source to table.

By not relying on imported produce, gardening allows me the chance to live in natural balance with the seasons. Basing my diet on the harvest schedule allows for diversity in the kitchen and keeps the dinner table new and exciting across the spring, summer and fall months. I look forward to researching recipes as I find new ways to work with ingredients and eating seasonally helps to keep me mindful of the implications tied to the imported food I eat through the rest of the year.

Growing food for myself also allows me to keep tabs on the ways in which the food I eat is grown. Monitoring the health of the soil in my garden, utilizing organic methods, and foregoing pesticides and fertilizers ensures that my produce is one of the most nutritious.

A 1983 study by the Rural Advancement Foundation International compared USDA listing of seed varieties sold by commercial U.S. seed houses in 1903 with those in the U.S. National Seed Storage Laboratory in 1983. The survey, which included 66 crops, found that about 93 percent of the varieties had gone extinct.² By supporting organizations like Seed Savers Exchange³ I not only get to enjoy otherwise unavailable heirloom varieties but also help to contribute to sustaining broader, more diverse food sources.

In addition to teaching me more about food production, gardening also allows me to keep up my Grandma's legacy of knowledge. A product of the great depression, I learned so much about gardening from my Grandma. With a do-it-yourself ethos, I have many memories of helping her build make-shift trellises from recycled materials and of moving through the rows of her garden as she passed on tips about how to grow various produce. To my grandma, growing up under the influence of World War II, gardening was a necessity. During World War II, home gardens accounted for 40 percent of America's vegetable supply.⁴ Planting gardens in back and front-yards, empty lots and rooftops, people shared resources and planted a variety of foods, all in the name of patriotism. Despite its foundations in conflict, it was a patriotism rooted in caring for community – a sort of patriotism I can get behind.

And this leads me to one of the ultimate reasons why I think it's important to garden – it is a revolutionary act. Growing one's own food is a powerful gesture, one that many of us have lost sight of. Ron Finley, the activist behind L.A. Green Grounds, a volunteer organization building vegetable gardens in vacant lots and sidewalk medians in under-privileged neighborhoods, is quoted as saying: "We've gotten so far away from our food source. It's been hijacked from us. But if you get soil, plant something in it and water it, you can feed yourself. It's that simple."⁶

Staking a claim in our neighborhoods and communities and developing them into gardens instead of large corporate strip malls and advertising billboards reminds us that this city is ours and that it can be healthy and productive if nourished and protected.

"Gardening is the most therapeutic and defiant act you can do, especially in the inner city. Plus, you get strawberries."⁶

Sources:

1. Food and Climate Change – DavidSuzuki.org
2. "Our Dwindling Food Variety" from National Geographic Magazine, 2013.
3. Seed Savers Exchange is a non-profit organization that saves and shares heirloom seeds. Their mission is to conserve and promote America's culturally diverse but endangered garden and food crop heritage for future generations by collecting, growing, and sharing heirloom seeds and plants. <http://www.seedsavers.org/>
4. Victory Gardens At a Glance – The National World War II Museum, New Orleans.
5. Urban Gardening: An Applesed with Attitude – David Hochman, New York Times, May 3, 2013.
6. From Ron Finley's 2013 TED Talk – watch it online: <http://ronfinley.com>

Promoting the use of diverse seed types enhances food security – especially in our rapidly changing climate.

A DIY Guide to Planting Seedlings

First printed in the Seed Sower [April 2015]

Basic Information:

Planting seedlings is a great way to get a head start on your garden while also saving money and having greater control over your veggies. My strategy most years is to plant as many seedlings as I can so that, if some don't turn out, I still have time to direct seed or purchase healthy seedlings from the garden center.

Supplies:

You'll need a few basic things in order to get your seedlings started:

- Seedling containers (I like to use organic peat pots)
- Seed starting mix [if you want to make your own mix combine four parts peat moss, four parts vermiculite, and one part perlite]
- Plastic to cover the seedlings while they germinate
- Your seeds*

I purchase pre-ready windowsill seedling trays which cost about \$10 (for 32 cells). They generally come with everything you need to get started except seed starting mix.

Planting Steps:

1. Add your starting mix to the containers and soak – the best strategy for this is to place the containers in a tray, fill the bottom of the tray with water and allow it to naturally soak each cell. You want your cells to be damp but not soggy (too wet can cause your seeds to rot).
2. Plant seeds as noted on your seed packet. Generally you will want to plant a few seeds in each cell and thin the seedlings later.
3. Seal the tray with plastic and place in a sunny window (but not too sunny) – this creates a sort of mini greenhouse providing enough moisture and humidity for your seeds to sprout. Most seeds germinate well at about 70°F.
4. Once you see your seedlings emerge and the first leaves start to open remove the plastic and move your tray to a sunny window.
5. Seedlings need a lot of light and many people rely on fluorescent shop lights to provide adequate levels. Ideally, they will have about 12-14 hours of bright light each day.
6. Water when soil is visibly dry – seedlings need a lot of water and dry out pretty quickly in a sunny window. Again, watering from the bottom up is a good strategy (remember: too much water can cause your seeds to rot!).
7. If your seedlings become crowded in their cells thin the weaker seedlings out. If the seedlings outgrow their containers transfer them into larger containers filled with a mix that includes compost. You can use recycled cartons or plastic containers, just

- be sure to poke a drainage hole in the bottom of each.
8. About 1 week before you are ready to plant your garden, start hardening off your seedlings to help them acclimatize to the outdoors. On a warm day move the containers to a shaded, protected spot outside for a few hours. Gradually increase plants exposure to the sun and wind each day. At the end of the week leave them out overnight before transplanting into the garden.
 9. If you can, it's best to transplant the seedlings to the garden on an overcast day to help ease the shock of transition from pot to ground.

**Seed life span varies and depends on storage conditions. Seeds that are kept in air-tight containers in a cool, dry place will last longer than those in more humid conditions. Here is some information on minimum seed life (depending on storage conditions):

One Season:	Spinach
One Year:	Sweet Corn, Parsnips
Two Years:	Bush & Pole Beans, Beets, Parsley, Peas, Peppers, Swiss Chard
Two to Three Years:	Leeks, Onions
Three Years:	Carrots, Cucumbers, Lettuce, Melons, Tomatoes
Three to Four Years:	Squashes
Four Years:	Turnips, Radishes
Three to Five Years:	Collard, Kale, Broccoli, Brussels Sprouts, Cabbage, Cauliflower

Remember these are just minimums – another good reason to start seedlings is to test your seeds before planting!

Sources:

Savonen, Carol. "How Long Do Garden Seeds Last?" Oregon State University Extension Service. 19 Feb. 2003. Web. 11 Apr. 2014. <http://extension.oregonstate.edu/gardening/how-long-do-garden-seeds-last>

White, Hazel, Sanchez, Janet H., & the editors of Sunset Books. The Edible Garden. Menlo Park, CA: Sunset Pub., 2005. Print.



Vegetable Pairings and Tips for Planning Your Garden

First printed in the *Seed Sower* [May 2014]

It can be difficult to plan your garden and to find ways to get all the vegetables you want within a limited space. Here are a few tips to help make the most out of your garden plot.

Interplanting¹ (or, intercropping)

The practice of growing two different crops in the same spot. Plant fast growing crops (ex. radishes, turnips, lettuce, other greens) around or alongside slower growing ones (ex. cabbages, tomatoes) to maximize your garden plot's space.

Companion Planting²

Try planting your vegetables next to others that like them or can help to keep them healthy. Here are a few examples:

	Like...	Don't Like...
Beans	Basil, Tomatoes, Parsley, Carrot, Cabbage, Cauliflower, Cucumber, Marigold.	Onion, Garlic, Potato, Chives, Fennel, Leek, Garlic.
Beets	Lettuce, Kohlrabi, Onion, Sage.	Pole Beans.
Cabbages	Beetroot, Celery, Dill, Onions, Potatoes, Sage.	Pole Beans, Strawberries, Tomatoes.
Carrots	Bush Beans, Pole Beans, Lettuce, Onion, Pea, Radish, Tomato.	Chives, Dill, Parsnip, Radish.
Cucumbers	Beans, Celery, Lettuce, Peas, Radish, Sunflower.	Aromatic Herbs, Cauliflower, Potato, Basil.
Lettuce	Carrots, Cucumber, Onions, Radishes, Strawberries.	Beans, Parsley.
Onions	Broccoli, Cabbage, Lettuce, Strawberries, Tomatoes.	Beans, Peas.
Tomatoes	Asparagus, Celery, Carrot, Parsley, Marigold, Onions.	Cabbage, Cauliflower, Corn, Fennel, Potato.
Radish	Carrots, Spinach, Parsnip, Cucumbers, Beans.	Cabbage, Brussell Sprouts, Broccoli, Turnips.

Sources:

1. White, Hazel, Sanchez, Janet H., & the editors of Sunset Books. *The Edible Garden*. Mento Park, CA: Sunset Pub., 2005. Print.
2. "Companion Planting Chart. Map and Guide." Web. 04 May 2014.

Succession Planting

This past summer I spent more time focused on succession planting, which allowed me to maximize the limited growing space of my garden while diversifying my harvests across the summer and keeping me busy across the season. It took a little planning, but I'm hoping to work on it even more this year.

There are two main ways to approach succession planting, the simplest is to continually plant seeds every two weeks of quick producing plants in order to stretch-out your harvest. It works well with bush beans, salad greens, green onions and radishes. Slightly more organizing is needed when using succession as a method for diversifying your harvests. For example, in a space where an early spring crop like radish or lettuce has been harvested and it's getting too hot to grow more, you can replace with some beans. Once the beans have finished you can succeed them with a late summer crop like cabbage or spinach for a fall harvest. Check the growing needs of individual seeds to start planning for this sort of planting!

Succession planting in intervals works well with most cool-weather and short season crops: lettuces; spinach; radishes; carrots; peas; bok choi; radicchio; arugula; and swiss chard.

This year I plan to focus more on interplanting, essentially the practice of growing multiple crops in the same spot. With interplanting you need to pay attention to how long and how big things grow, as well as what pairs grow well together.

A couple examples: plant faster growing crops like radishes, turnips, lettuce and greens along with slower growing veggies like cabbage and tomatoes; plant small, compact crops like beets, parsley and basil close to taller ones like pole beans, trellis tomatoes, or sunflowers. Make sure the taller plants don't completely block the sun for the smaller, but usually in the height of summer the smaller plants will appreciate the shade!

Planting Diversity

Planting groups or beds with a diversity of species — plant some herbs, grasses and flowers in your bed among your vegetables. It can help to attract pollinators, repel pests, suppress weeds and enhance your soil!

What to Expect For Future Gardening

In 2001, Natural Resources Canada updated the plant hardiness map which had previously used data from 1967. The new map indicates changes in the hardiness zones as a result of an increase in measured locations, improved technology to monitor data, and changing climate. Most pronounced in western Canada, you might find that plants you counted on in your garden previously no longer do as well. Most areas in Canada along the U.S. border are at least half a zone higher now.

Here are some of the changes in zone hardiness seen across Canada¹:

	1961-1990	1981-2010		1961-1990	1981-2010
Vancouver	Zone 8A	Zone 8B	Winnipeg	Zone 3A	Zone 4A
Dawson City	Zone 0A	Zone 0A	London	Zone 5B	Zone 6B
Edmonton	Zone 3B	Zone 4A	Montreal	Zone 5B	Zone 6A
Calgary	Zone 3B	Zone 3A	Fredericton	Zone 4B	Zone 5B
Regina	Zone 3A	Zone 3B	Halifax	Zone 6A	Zone 6B

As the effects of climate change continue to intensify, the gardening season has become quite unpredictable. Gardeners are finding their growing seasons have become more variable, at times exacerbated by extreme drought or other erratic weather patterns.

The more CO₂ in the atmosphere, the warmer global temperatures. Several studies have found that even though increased CO₂ makes plants grow bigger and faster, it also can cause a reduction in proteins and other nutrients along with an increase in carbohydrates in many species.²

A study published in *Nature* in 2014 found that increased CO₂ reduced the amount of valuable minerals like zinc and iron in 130 species of food plants.³ Another study from the University of Daegu in South Korea found that increases in CO₂ caused calcium, magnesium, potassium, zinc and iron concentrations to all decline while sugar and starch content increased.⁴

Sources:

1. From: <http://www.planthardiness.gc.ca> updated: 2017-01-04
2. Suzuki, David. "Carbon dioxide and food: We can't sacrifice quality for quantity," *rabble.ca*, 2017.
3. Datz, Todd. "Rising CO₂ poses significant threat to human nutrition," Harvard T.H. Chan School of Public Health, 2014.
4. Loladze, Irakli. "Hidden shift of the ionome of plants exposed to elevated CO₂ depletes minerals at the base of human nutrition," *eLife* 2014;3:e02245, 2014.



A resilient garden is a diverse garden.



DROUGHT - The impacts of climate change are having a strong impact on our gardens. As temperatures are on the rise and drought becomes more common, we need to think more carefully about the seeds we plant. Use seeds that are better adapted to cope with warmer and often drier conditions, in extreme cases you might not be able to count on species you've come to know as native species.

METALS - All plants need some heavy metals in small amounts, for example: iron, copper, and manganese are essential to plant function. Some plants that can tolerate high amounts of metals in their system, even more than they need for normal growth, before exhibiting toxicity symptoms.

A plant that can take up more metals than normal plants is called a *hyperaccumulator*. Hyperaccumulators can absorb more heavy metals than are present in the soil in which they are growing.

Phytoremediation is the process of using living plants to aid in the removal or destruction of contaminants in the soil, air or groundwater. This website is an amazing resource that allows you to look up specific plant species that contribute to metal take up: check it out as you plan your own garden: <http://www.steviefamulari.net/phytoremediation/index.php>

A Few Examples:

Sunflower (*Helianthus annuus*) can take up a number of toxins including: Arsenic, Cadmium, Chromium, Copper, Lead, Manganese, Nickel, Polychlorinated Biphenyl (PCB), and Zinc.

Hairy Golden Rod (*Solidago hispida*) is a hyperaccumulator/accumulator that can take up: Aluminum, Trichloroethylene (TCE) and by-products.

Hydrangea (*Hydrangea macrophylla*) can take up Aluminum.

White Lupin (*Lupinus albus*) can take up: Arsenic and Nitrogen.

Yarrow (*Achillea millefolium*) is an accumulator that can take up: Cadmium.

Mustard (*Brassica juncea*) accumulates Copper, Selenium, and Nickel.

Chives (*Allium schoenoprasum*) can take up Cadmium.

Radish (*Raphanus sativus*) can take up Arsenic, Cobalt, Copper, and Nickel.

Soybean (*Glycine max*) can take up Arsenic, Cobalt, Copper, and Nickel.

Zucchini (*Cucurbita pepo*) can take up Arsenic, Cadmium, Lead, and Zinc.



Pay attention to how your yard grows naturally. When you support local species in your garden, you create habitats that enhance your garden for wildlife natural to your region.

Seed Bombs!

First printed in the Seed Sower [April 2015]

Seed bombs are a great way to plant seeds in hard to reach places such as vacant and abandoned lots. They repurpose spaces otherwise forgotten or underused as dictated by over-reaching capitalism (parking lots, torn down buildings awaiting to be turned into condos, abandoned lots, etc). Seed bombs are a helpful and easy way to add color and encourage the presence of bees in and around your neighborhood.

This practice comes out of the movement called Guerrilla Gardening. The movement is based around repurposing and utilizing land that the gardeners do not legally have ownership over.

The earliest use of the term Guerrilla Gardening is from 1973 by Liz Christy in New York City. Since then it has gained a large political following as a form of protest. Originally an ancient practice, what follows is the most commonly used method of making seed bombs. Its re-invention is credited to Japanese Biologist Masanobu Fukuoka.

Materials Needed:

- wild flower mix - I use a drought tolerant mix with native species
- seed starter
- compost or potting soil
- clay (air dry clay works well)
- water

Mix all ingredients together to form small balls (about the size of golf balls) using the water to bind the ingredients together. The clay acts as a supporting material and makes it more difficult for birds and insects to eat the seeds, while the seed starter and potting soil (compost) act as growing materials once your seeds begin to sprout.

Let the seed bombs dry in the sun for a few hours - then go out and find a location to toss them! It's a great project to do with kids, they get their hands dirty, get to throw things and learn about what seeds need to survive. Make sure to visit the sites you bombed with seeds frequently over the summer to see how the flowers progress.

How to Save Seeds: A Step by Step

- Annuals, like tomatoes and peppers flower, set seed and die in a single growing season whereas biennials need to go through a cold period before they flower. Onions and carrots are examples of biennials, they don't produce seed until their second growing season. Perennials, like asparagus, flower over many years.
- In some plants, cross-pollination needs to be avoided between different varieties of the same species. Others, like beans, lettuce and tomatoes require little to no isolation – and return many seeds with only a few plants.
- It is generally best to pull seeds from a population crop that is of substantial size, otherwise, if the seed crop is too small, some genetic diversity could be lost over subsequent generations. This could effect overall plant structure, vigor, germination and yield of future crops.
- In many cases, the crops we eat are actually of immature fruits, if you plan on saving seeds from these crops you need to let a few of the fruits mature in the garden before saving. Examples are: cucumber, summer squash and eggplant. Others, like beans, can be pulled for seed saving once the seeds have dried and hardened on the vine.
- Dry fruited crops are exactly as they sound and require minimal processing for saving. Since the seeds are already dried and hardened, you just need to separate them from their respective stocks.
- Wet fruited crops need to be extracted from the flesh of the fruit before seeds are dried and saved. In the case of tomatoes, for example, first extract the seeds along with some pulp and leave out to ferment over a few nights. Then, decant the seeds with water in a food processor. The seeds will sink to the bottom for easy removal. Spread the seeds out evenly on a coffee filter to dry (make sure they're not touching).
- Store your seeds in a cool, dark and dry place. Once dried, seal them in an airtight container. They can be stored in the fridge or freezer for several years.

With notes from: <https://www.seedsavers.org/how-to-save-seeds> and *The Seed Garden: The Art and Practice of Seed Saving*, edited by Lee Buttala & Sharyn Siegal, 2015.

Here are some approximate seedling starting times for specific vegetables:

12 to 14 weeks:	chives, leeks, onions.
8 to 12 weeks:	cabbage-family, bok choy, brussels sprouts, lettuce, peppers.
6 to 8 weeks:	cauliflower, eggplants, tomatoes.
2 to 4 weeks:	cucumbers, melons, okra, pumpkins, squash.

*see planting calendar guide in this zine for more details as to when to start specific seeds indoors



Planting wildflowers helps to attract and sustain essential pollinators and wildlife.



Help revive monarch butterfly populations by planting milkweed in your garden! Milkweed provides benefits to the monarch beyond a place to lay eggs and nourish larvae; toxins specific to the plant make the caterpillar and adult monarchs unpalatable to predators. Monarchs, considered endangered in Canada, play a critical role in the ecosystem by pollinating wild flowers and serving as food for birds and other insects. They are generally considered a barometer for ecological health.



- *pack contains 1 or more seeds saved from organically grown produce
- *I don't always follow the rules & sometimes am kinda lazy - seeds are not guaranteed to produce

christina battle, 2018

*We will not have food sovereignty
until we have seed sovereignty.*



**See: <http://cbattle.com/seeds-for-the-end-of-the-world/>
for more tips and articles about seed saving**

Appendix 3 - in the garden (one), zine, 5.5" x 8.5", 31 pages, 2018



Velvetleaf - *Ahrtimon theophrasti*
(Velvetweed, Chinese Jute, Butterweed, Butterprint, Pie-maker, Indian mallow). An annual plant native to southern Asia but introduced to North America in the 18th century where it is now considered an invasive species. Has been grown in China since approx. 2000 BCE for its edible leaves and seeds. Named for its velvet-like heart shaped leaves. An extremely competitive plant that steals nutrients and water from crops.



in the garden (one)
[london, ontario, summer 2018]
c. battle 2019

Leishner's Fleabane - *Centaurea leishneri*
(Leishner's Fleabane, Flea-bane). Native to southern Louisiana and Texas (grows best in full sun and can survive in dry periods of drought).



Garden sorrel - *Rumex crispus*
(Garden sorrel, Sorrel). Native to Mexico but now widely naturalized. It is an annual that can self-sow for several years. Can produce heat when enough water is available but not drought tolerant. Also can succumb to strong winds or extreme cold. Eaten by snails, slugs and aphids.

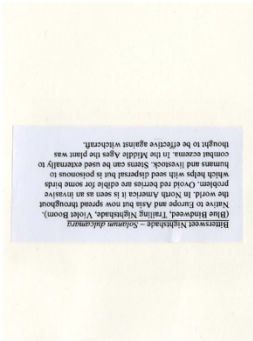




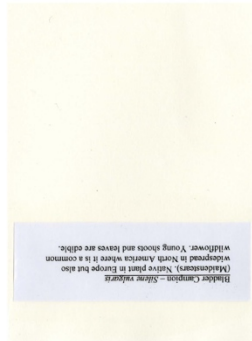
Queen Anne's Lace - *Daucus carota*
(Wild Carrot, Bird's Nest, Bishop's Lace). Native to temperate regions of Europe and Southwest Asia, now naturalized in North America and Australia. Like cultivated carrots, the root is edible while young, flowers can be battered and fried and leaves are edible in small quantities. Capable of providing a microclimate of cooler, moister air when intercropped with cool season crops like lettuce and knives to boost tomato production when planted nearby. Contact with the plant can cause skin irritation and blistering.



Horace - *Borago officinalis*
(Starflower). An annual herb that is self-seeding. Was traditionally cultivated for food and medicinal uses, now mainly used as an oilseed. Leaves have a cucumber-like taste, flowers are sweet-tasting like honey. Used for gastrointestinal, respiratory and cardiovascular disorders.



Hibiscus *Hibiscus* - *Schinus molle*
Native to Europe and Asia and now spread throughout the world. In North America it is seen as an invasive species. Used and known for some health benefits. Dried and brewed the in potencies to humans and livestock. Some can be used externally to combat warts. In the Middle Ages the plant was thought to be effective against witchcraft.



Hibiscus *Hibiscus* - *Schinus molle*
(Kudzu root). Native plant in Europe but also widespread in North America where it is a common wildflower. Young shoots and leaves are edible.

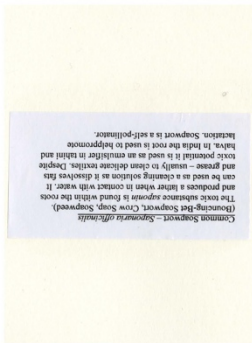




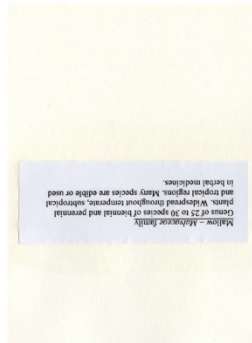
Creeper Bellflower - *Campanula tracheloides*
(Rampion Bellflower). Native to Europe and western Siberia, but now introduced to North America where it is an extremely invasive weed that often chokes out other plants. Spreads by underground rhizomes with deep, taproot-shaped tubers that make it hard to eliminate.



Red Hot Poker - *Kniphofia uvaria*
(Torch Lily, Tritoma). There are many varieties of torch lily, that bloom at different times during the growing season. Originates from the Cape Province of South Africa but has been introduced into many parts of the world.



Common Stachys - *Stachys officinalis*
(Pounding-Hot Stachys, Cow Slugs, Spigweed). The toxic substance *apigenin* is found within the roots and produces a bitter when it comes in contact with water. It can be used as a cleaning solution as it deters flies and grasse - usually to clean delicate knickies. Dogbane and ground-ivy is used as a substitute in liquid and tonic. Stachys is used as a self-pollinator.

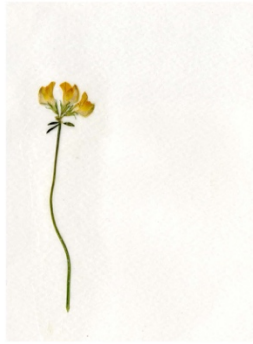


Milium - *Milium effatum*
Grass of 25 to 30 species of herbals and perennials and tripartite regions. Many species are edible or used in herbal medicines.





Siberian Larkspur - *Delphinium grandiflorum*
 Native to Russia and China. A short-lived perennial often treated like an annual because of its unpredictability in terms of returning the next season. Larkspur is poisonous.



Bird's-foot trefoil *Lotus corniculatus*
 (Eggs and Dacot) Common flowering plant in the in the pea family. Fabaceae. Has non-shooting properties and is often used as a food for livestock. Can also be used as a sedative. Host plant for ovipositioning of the wood white butterfly, *Leptidea sinapis*.

German Chamomile - *Matricaria chamomilla*
 Annual of the composite family Asteraceae. Used as a mild sedative, is anti-inflammatory and beneficial.



White Clover *Trifolium pratense*
 (Lemon) One of the most widespread types of clover. Widespread and abundant white clover can grow in many types of soils including a variety of pH. High in protein. Clovers are often used as a forage crop for livestock.

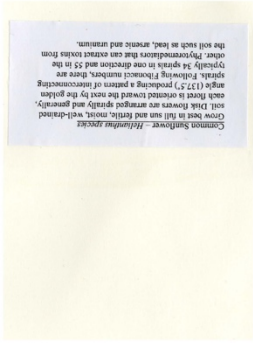




Red Clover - *Trifolium pratense*
Native to Europe, Western Asia and Northwest Africa, now naturalized in other regions and part of the bean family. Drought tolerant due to a profuse taproot. Nitrogen fixer and used as a fodder crop to increase soil fertility. Used in herbal tea.



Common Motherwort - *Leonurus cardiaca*
(Lion's Ear, Lion's Tail). Perennial in the mint family. Prefers well drained soil and part shade. Originally from Central Asia and southeastern Europe, Motherwort is now found worldwide. Has been cultivated since ancient time as a herbal remedy; contains leonurine (a natural alkaloid) making it an effective anti-spasmodic (relaxes muscles, especially the heart) and aids in blood clotting. Eases stress and anxiety.



Common Sunflower - *Helianthus annuus*
Crown heads in full sun and fertile, moist, well-drained soil. These flowers are arranged spirally and generally each flower is oriented toward the next by the golden angle (1.37). Producing a pattern of interconnecting spirals. Florets in the center are yellow and the petals are yellow. The seeds are contained in the center of the head. The seeds are contained in the center of the head. The seeds are contained in the center of the head.



English Lavender - *Lavandula angustifolia*
One of known species of the genus in the mint family. Native to the Old World, widely cultivated. For use as a culinary herb and essential oil. Prefers full sun and dry, well-drained, sandy or gravelly soil.



Common Motherwort - *Leonurus cardiaca*
(Lion's Ear, Lion's Tail). Perennial in the mint family. Prefers well drained soil and part shade. Originally from Central Asia and southeastern Europe, Motherwort is now found worldwide. Has been cultivated since ancient time as a herbal remedy; contains leonurine (a natural alkaloid) making it an effective anti-spasmodic (relaxes muscles, especially the heart) and aids in blood clotting. Eases stress and anxiety.



Field Mustard - *Brassica rapa*
(Turnip Rape, Wild Mustard, Bird's-eye), Common field weed that is the origin of many cultivars including canola, turnip and bok choy.



Evening Primrose - *Oenothera biennis*
(Evening Star, Sun Drop). Lifespan of two years and prefers sunny environments with heavy soil. Flowers have a nectar guide pattern visible to pollinators but invisible to the naked eye except under ultraviolet light. Virtually all parts are edible, often boiled as tea and used as a stimulant.

Franklinia - *Franklinia alatamaha*
Remnant of short-lived perennial. Leaves, flowers and seeds all contain digitoxin, a cardiac glycoside that is poisonous if ingested. When extracted from the leaves, though, this same compound is used as a medication for heart failure.



Wood Tansy - *Achillea millefolium*
(Woodland Forget-me-not). A short lived perennial adapted to a variety of environments. They prefer dry, cool climates.



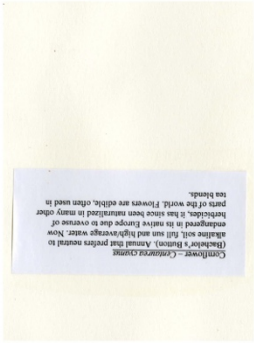
Blackberry - *Rubus idaeus*
An annual or perennial vine. Used as food plants by the larvae of some butterflies and moths.



Columbine - *Anemone nemorosa*
A perennial found in meadows and woodlands used as food plants by butterfly and moth caterpillars. Flowers of various species were at one time consumed in moderation but the seeds and roots are highly poisonous.



Evening Primrose - *Anemone hepatica*
(Evening Star, Sun Drop). Lifespan of two years and prefers sunny environments with loamy soil. Flowers have a nectar guide pattern visible to pollinators but invisible to the naked eye except under ultra-violet light. Virtually all parts are edible, often boiled as tea and used as a stimulant.



Comfrey - *Ranunculus acris*
(Bachelor's Button). Annual that prefers neutral to alkaline soil. All uses and applications have been abandoned in the early 1900s due to concern of endangering its native European range. Now native to the world. Flowers are white, often used in tea blends.



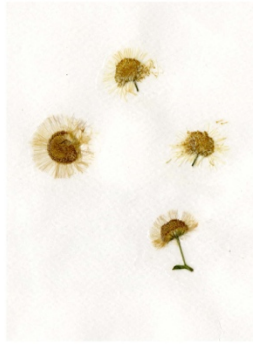
St. Dymphna - *Ranunculus repens*
(English Ranunculus, Buttercup, Ranunculus). Native to Eurasia, introduced species that is native to North America. Used in folk medicine and remedies. Treats disorders of the respiratory tract, skin, insect bites, and infections.



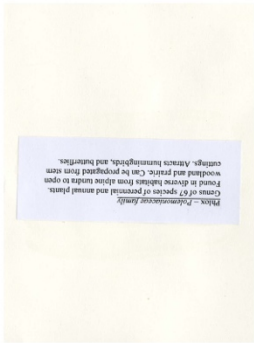
St. Dymphna - *Ranunculus abortivus*
(English Ranunculus, Buttercup, Ranunculus). Native to Eurasia, introduced species that is native to North America. Used in folk medicine and remedies. Treats disorders of the respiratory tract, skin, insect bites, and infections.



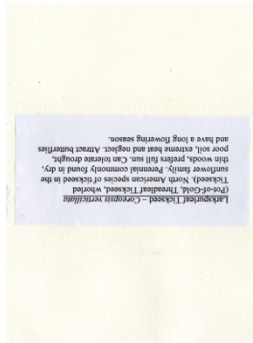
Erythrina arborea - *Erythrina arborea*
Robust, sprawling perennial in the Pea Family (Fabaceae) that is native to Europe but also present on other continents. Can reproduce vegetatively from its taproot and rhizomes, or by reseeding. Seeds are poisonous.



Annual Fleabane - *Eragrostis amabilis*
(Eastern Daisy Fleabane). Often an annual but can grow as a biennial. Native to North America, it is a pioneer species that often colonizes disturbed areas and competes, often successfully, with introduced invasive weeds. Caterpillars feed on the flowers and seeds while some mammals eat the foliage, flowers and stems.



Thalictrum minus - *Thalictrum minus*
Found in diverse habitats from alpine tundra to open woodlands. Attracts hummingbirds and butterflies. Wooded and prairie can be propagated from cuttings.



Lactuca tiliacea - *Lactuca tiliacea*
Tolerant of North American species of tilled soil in the (pre-)Coral Trenches. Tolerant of tilled soil, and have a long flowering season. Attract butterflies and have a long flowering season. Attract butterflies and have a long flowering season.



Appendix 4 - Curriculum Vitae

Name:	Christina Battle
Post-secondary Education and Degrees:	<p>University of Western Ontario London, Ontario, Canada PhD, Art & Visual Culture (2016 – in progress)</p> <p>San Francisco Art Institute San Francisco, California, USA Master of Fine Arts (2005)</p> <p>Ryerson University Toronto, Ontario, Canada Certificate in Film Studies (2001)</p> <p>University of Alberta Edmonton, Alberta, Canada Bachelor of Science with Specialization in Environmental Biology (1996)</p>
Honours and Awards:	Province of Ontario Graduate Scholarship (2019, 2018, 2017)
Related Work Experience	<p>Adjunct Faculty University of Western Ontario Department of Visual Arts (2018)</p> <p>Teaching Assistant University of Western Ontario Department of Visual Arts (2016-2018)</p> <p>Affiliate Faculty Metropolitan State University of Denver Department of Art (2015)</p> <p>Affiliate Faculty University of Colorado, Denver Department of Visual Arts (2014)</p> <p>Assistant Professor (Full time, tenure track) University of Colorado, Boulder Film Studies (2009 – 2012)</p> <p>Sessional Faculty Ontario College of Art & Design (OCAD University) Integrated Media Department (2006/2007/2008/2009)</p>

Publications:

Battle, Christina. "Distributed Systems and the Collective Model." In *Other Places: Reflections on the Media Arts Practices in Canada*, edited by Deanna Bowen, PUBLIC Journal, forthcoming fall 2019.

Battle, Christina. "[What's Happening?] I'm feeling emotional." In *Interspecies Communication*, edited by Meredith Tromble & Patricia Olynyk, 88-103. PUBLIC Journal No. 59, 2019.

Battle, Christina. "There's something in the way," exhibition essay for the Cold Cuts Video Festival in Dawson City, Yukon, 2018.

Battle, Christina. "Cultural Shifts Within Artist Run Culture in Canada," YYZBooks, forthcoming.

Battle, Christina. "What is Left? What is Right? [expanding alliances]." In *What is Left? What is Right?* edited by Christina Battle, Gallery Digest, Vol. 2, 2017.

Battle, Christina. "Interview with Jesse Malmed." In *Back and Forth*, INCITE Journal of Experimental Media, 2017 (online).

Battle, Christina. "Interview with Dr. Lorena Rios Mendoza," to complement Kelly Jazac's exhibition at Gallery TPW, *Proof of Performances*, 2017.

Battle, Christina. "RT #Kaepernick Takes a Knee." In *Sports*, edited by Brett Kashmere and Astria Suparak, INCITE Journal of Experimental Media, Issue 7/8: 286-299. 2016

Battle, Christina. "When Police Brutality Videos Go Viral," an essay with epilogue, both can be accessed online.

Battle, Christina. "Essay accompanying the I'm Really a Witch.*," a program curated for London Ontario Media Arts Association.