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Feminist Electrifying Art as Challenging People to (Re)think Their Relationship to Electricity

Diploma Thesis

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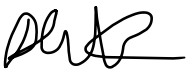

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Abstract

The need for decarbonization of energy production and the war in Ukraine has emphasized European's dependency over Russian oil and accelerated attention to the issues of the energy crisis in Europe. In Quebec, as electricity is powered mainly from hydropower, decarbonization has evaded proper considerations forgetting how this invasive energy production comes from and benefit settler colonialism. The pressing needs to address the energy crisis highlights its complexity and ongoing (mis)conceptions of electricity and its system within the general population. Electrical anthropologists have problematized western societies' understanding and conception of electricity as essential to (re)think our energy futures. Through an analysis of two case studies based on works of electrical art created by two women artists, this thesis analyzes how these works of art potentially challenge male dominant STEM practices by attending to the complexities and interconnectedness of electricity, its system, and the environment. The thesis argues that participants/listeners/viewers are challenged in their relationship to electricity (and its system) towards more responsible and response-able approaches. Drawing on feminist theorists within feminist epistemologies and new materialism, the thesis analyzes how the works of art's multisensory assemblages and the artist's artists' apparatus of knowledge production, affective relationship towards more-than-humans and attentiveness to humans and nonhumans entanglements.

Key words: electricity, energy crisis, situated knowledge, settler colonialism, works of art, entanglements, affect.

Table of content

Table of content iv
Introduction 1
1 Chapter 1 Literature Review 6
1.1 Introduction 6
1.2 Electricity's agency 7
The force of electricity 7
Male dominant STEM field 8
Electricity's agency 9
Invisible and forgotten energy infrastructures 10
Gatekeeping 10
Electricity is (not) good to 'think-with' 12
1.3 Electric art: sensorial happenings in the more-than-human worlds 14
Art in natureculture 14
Work of art 14
Electrical art and sensorial happenings 15
Affect 16
1.4 (Re)thinking embedded in care, response-ability and responsibility 17
Work of art's potential 17
More-than-humans, nonhumans, and humans' entanglements in natureculture 17
Care and responsibility and response-ability 18
New ways to know 19
1.5 Conclusion 19
1 Chapter 2 Methodology 21
2.1 Research questions and sample 21
2.2 Methods and analysis 22
2.3 Positionality 25
Chapter 3: Affective sonorities in *Electrical Walks* by Christina Kubisch 27
3.1 Introduction 27
3.2 Becoming attentive to the more-than-humans world 28
3.3 Hearing and listening: Sensorial happenings as new ways to know and remember electricity 31
3.4 Touched by sound: emotions and affect 33
3.5 Growing responsible and response-able 37
3.6 Conclusion 40

4 Chapter 4: Challenging Relationships: Care and Responsibility in Christine Beaulieu's *J'aime Hydro* 42
4.1 Introduction 42
4.2 Setting the play in its context 44
4.3 Addressing social ignorance 45
4.3 Positioning oneself 47
4.4 Learning to love Hydro with good science 50
4.5 Becoming vulnerable 52
4.6 Affected in more-than-human world 53
4.7 Learning to love and care with hydro 55
4.8 Awareness, and surprise 60
4.9 Conclusion 62
Chapter 5 Discussion and Conclusions 64
5.1 Discussion: A dialogue between *Electrical Walks* and *J'aime Hydro* 64
Introduction 64
Rethinking in awareness 65
Feminist epistemologies within more-than-human world 65
The affected body 66
5.2 Conclusion 67
Bibliography 72
APPENDIX A 80
APPENDIX B 81
APPENDIX C 82

Introduction

Since the invasion of Russia in Ukraine in February 2022, in the context of the ongoing repercussions of the COVID-19 pandemic, there has been an increase attention given to the global energy crisis as it as limited countries dependant of Russian oil access as well as increased their desire to cut loose from this dependency (IEA – International Energy Agency 2022). The first issue of the energy crisis is greenhouse gas emissions as major factor responsible for the climate change crisis (Ritchie et al. 2020). Indeed, in 2019, the total energy for transport, heating and electricity worldwide was produced from 84.3% of fossil fuels; electricity generation alone accounted for 63.3% (Ritchie et al. 2020). This is highly problematic considering that about three-quarters of global greenhouse gas are emitted from energy production leading to environmental degradation affecting human health: air pollution being responsible for about five million deaths yearly (ibid). The second dimension of the energy crisis specifically focuses on electricity access which is defined by the international community as "having an electricity source that [provides] very basic lightning and [capacity to] charge a phone or power a radio for four hours per day" (Ritchie et al. 2022). Although this is a generally accepted definition to collect data on electricity access, there is no legal recognition in human rights charts stating any right to access electricity leave along clean ones. Electrification is also a process that guarantees "dual access": people's access to electricity and thus to modernity, but also the access of the market to more people "expanding quite literally with the extension of the electric grid" (Labban 2012, 389). While the United States consider connecting all citizens to the grid as a measure of modernity, the issue of affordability is often disregarded, and energy access is predominantly understood in technical terms, neglecting the intricate microscale energy geographies that influence it, as well as the broader adoption of renewable energy technologies (RETs) (Kirshner and Power 2019). While essential for the participation of "modern life", there exists a normative assumption that all individuals should have access to grid connectivity, yet the necessity and desirability of relying on the grid are rarely subjected to critical examination. (Gupta 2015 cited in Kirshner and Power 2019, 155). On the other hand, seeing electricity as a necessary means for "modern" or "civilized" life is contributing to a colonial approach to electricity (Shove 2003). The exacerbation of symptoms of the energy crisis resulting from Russia's war on Ukraine therefore increases electricity and oil prices accentuating vulnerabilities in certain regions which disproportionately affects vulnerable

populations such as children, women, and minorities (Ritchie et al. 2022). Governments have started considering ways to revise policy measures to accelerate energy transition towards renewables or nuclear energies as well as to promote economic recovery. While positive in aiming to reduce air pollution, energy transition comes with a set of mixed messages from the different agents that are interconnected. For instance, electricity consumers are pushed to consume more by companies that are selling all types of technological devices promised to make life better while some governments incite the population to consume less based on individual responsibility. Furthermore, consumer organizations pressure to diminish prices to limit energy vulnerability (Abram et al. 2019). These mixed messages intertwine in a confused discourse about what energy and electricity are respectively. The difference and definitions will be addressed in the literature review. As anthropologist of electricity begin to lay out the complexity of energy system related to misconceptions of electricity and coupled with the infrastructure of electricity, Gretchen Bakke (2016) frames it as 'the grid, then, is built as much from law as from steel, it runs as much on investment strategies as on coal, it produces profits as much as free electrons' (13). To resolve these issues, it seems a turn towards feminist and new materialist conceptions of electricity and its infrastructure would push forward a more ethical approach to electricity that could address the inequalities created by its systems.

I became aware of the energy crisis from my encounter with electrical art. Before, as I grew up in Québec where 66% of electricity is produced from hydropower that is considered "clean" and reliable, discussions over the need to transition to low-carbon – decarbonization, are less present (Beaulieu 2019) and I never thought about it. These mixed messages intertwine in a confused discourse about what energy and electricity are respectively. The difference and definitions will be addressed in the literature review. (Kinder 2021). Furthermore, decarbonization "problematize the working of electricity grids and the need to balance supply and demand, adapt to intermittent and distributed supplies, rethink electricity storage and work out how all this is to be financed in distributed, competitive, and international markets" (Abram et al 2019, 3). These issues demand new ways of thinking with energy and electricity to create a sustainable and just future which is "neither linear nor purely technical" (2019, 3).

So how did electrical art bring me to reflect upon these complex issues? My visit to the newly opened Kunsthalle Praha in March 2022 occurred when the gallery held the exhibition named *100 years of electricity in art* curated by the famous Peter Weibel. My encounter

with this whole new category of artworks that resonate with bioart have made me gain awareness of my own ignorance on electricity and its issues. After my visit I could not stop thinking how some of these artworks could work in similar ways as Haraway's (2011; 2014) analysis of Piccinini's biotechnological critters created from biological matter and provoking affectionate relation between the viewers and those partly technological, partly biological and both evoking human and marsupial's features. For instance, the *Cloud* which is a sound art installation created by Christina Kubisch is a structure made of more than one thousand meters of electric cables hanging from the celling. It works by electromagnetic induction for which hand-built headphones capture the sound emanating from the 12 channels captured within the wires of recordings from various locations such as power plants, garages, or security centers (Weibel 2022). As they are all mixed, the sounds emerging from the headphones allow participants to compose a melody that varies according to the way they move their body around the cables in proximity, height, and speed and listened to the sounds (Kubisch 2022). The *Cloud* in its shape, name, and audio recordings challenges natureculture binaries presenting elements taken in nature and enabled by digital storage (Weibel 2022). This short reflection of the *Cloud,* it is presenting the connexions that emanated when I thought of the issues of the energy crisis, transitioning to low-carbon energies complexities and a sudden challenging view that I felt at the Kunsthalle. From my feminist background and interest in feminist science and technologies studies, I saw a potential to read electrical artworks from a feminist lens to challenge the complex issues of energy transition. I want to establish the link between misconceptions of electricity established by anthropologists of electricity and how electric art might challenge binarities. Multiple questions emerged: is electricity agential? And potentially helpful to consider in its nature when addressing energy transition? How is electric art potentially producing new ways to think with electricity?

The goal of this thesis is to propose alternate ways of thinking with electricity. Two art projects have sparked my inspiration to rethink our approach to electricity, to unlearn the distant conceptualization we have of its nature and to take for granted its workings instead of questioning them (Abram et al. 2019; Pink 2011). Becoming response-able and responsible with electricity – a complex element that takes part of the more-than-living world response-ability in guiding us through the ways we are producing and consuming it as a good instead of a force participating in our life. It seems we only care about finding more efficient ways to provide more energy instead of thinking why and how to do it more responsibly. The structure of this thesis goes as follows.

In chapter 1, the literature review is divided in three sections. It begins with the introduction of notions of electricity to differentiate energy and electricity, and then I review the arguments of anthropologists of electricity on the sources of misconceptions of electricity that complicate finding solutions against the energy crisis which are based on language and capitalist economy that result in objectifying a "non-thing". In the next section, I broadly present categories of art by touching upon electric art and forms of art analyzed by feminist theory such as bioart. Finally, I lay out the literature review on concepts I draw from feminist epistemologies and feminist science and technology studies that work within an understanding of the more-than-humans world with concepts of responsibility, response-ability, and care.

In chapter 2, I present the methodology of this thesis. Drawing from different techniques of qualitative methods, a case study was performed for each art projects by analyzing field notes, textual analysis, interviews, my own observations as well as consulting pre-existing content about the artists. Based on the generated data, I thematized it to align the analysis within the concepts described in Chapter 1 and draw connections between the art projects. Finally, I reflect on my own positionality.

In chapter 3, the first chapter of analysis, I examine my findings concerning the art project *Electrical Walks*. Following the introduction of the art project providing further information about the artists and electromagnetic induction, the chapter analyzes the Following the introduction of the art project, the chapter analyzes the artist' research methodology, then follows the specificities of what sound art generates and finishes by discussing how the artist's understanding of electromagnetic waves as part of the more-than-human world can increase care and responsibility from the participants. This sensory experience destabilizes our sense of vision and gives access to new world of electricity's agency and nature. It is an interesting way to get to know electricity other than theoretical, more experimental.

Building on the different ways of knowing electricity, in chapter 4, I analyze a context specific documentary play that examines the relationship between Quebecers and their electricity distributor, Hydro-Québec. Initially providing substantial contextualization of the historical context surrounding Hydro-Québec as an important symbol in Quebecers national identity, this art projects attends to the infrastructures of electricity and their relation to the environment, the territory, the people, and the politics. A close analysis of the artist's

evolution as a researcher informs the audience on the importance of becoming responsible through gaining knowledge. In this chapter, I analyze the artist's research method, the affects generated by the play, the co-dependence of societies to electricity and the need to nurture and care for the relations between actors implicated in the generation of electricity. In this art project, domestic electricity manifests itself from its structure, the energy system, its politics.

In chapter 5, I begin with the discussion in which I put the two art projects in dialogue. The connection between these two artworks are projects done by women who work with and or centered around the topic of electricity and offer the participant an approach to electricity that allows (re)thinking of their relationship to electricity and the energy system towards responsibility and care. Finally, I conclude by reinstating my findings and proposing an angle for future research with electricity.

Chapter 1 Literature Review

1.1 Introduction

This chapter presents the literature review of how electricity has been researched in the social sciences, particular by (feminist) anthropologists of electricity, the existing literature on the study of electric art, sound art and feminist studies of art and affect. The studies of artworks are those that can "promp[t] new materialist ways of thinking and researching" within feminist science studies (Konturri and Tiainen forthcoming, 261). While few studies exist that explore the connection between electric art and the relationship of people/humans to electricity, much research in art history and gender studies such as bioart or post-migrant theater that studies affect as intergenerational trauma response examine the influential qualities of art and its capacity to affect bodies and resist Western philosophy based on the natureculture divide. Anthropologists of electricity on the other hand have explored human's relationship to electricity. They have also encouraged interdisciplinary work studying relationality between humans and electricity. This chapter therefore offers an interdisciplinary approach to (re)thinking our relationship to electricity that draws on (mis)conceptions and shortcomings within humans' understanding of electricity.

In this chapter, I begin by outlining basic notions of electricity and energy before reviewing existing bodies of literature on anthropology of electricity. The following section presents different approaches at the intersection of art studies and feminism such as looking at bioart, and how art affects the body/mind. I conclude by highlighting concept that will guide the empirical analysis, drawing on notions of feminist and science technology studies, feminist epistemologies such as Donna Haraway, Vinciane Despret and Astrid Schrader, to name a few, that will guide my analysis. The section focuses on concepts of responsibility, response-ability, and care.

The chapter focuses on the entanglements of humans with the more-than-human world ass well as drawing concepts from technoscience, feminist epistemologies and new materialisms. The first section lays out existing literature on anthropology of electricity that suggests enforcing the need for relationality in human-electricity relationship, I review some of the most pressing issues in Western approach to electricity (and energy) as well as providing basic notions of electricity. The following section draws on art practices, anthropologists' approach to electricity and the combination of both as offering new ways to thinking how electricity might nourish possibilities for more feminist convivial and sustainable energy/electric futures. Pursuing with an overview of the relationality introduced

in work of arts. Finally, theoretical concepts of response-ability, responsibility, care, borrowing from feminist and indigenous epistemologies, as well as feminist theorists from technoscience and new materialism are reviewed which are the foundational elements for this thesis' analysis.

1.2 Electricity's agency

The force of electricity

Drawing from the emerging field of the anthropology of electricity, electricity is conceptualised "non-thing" difficult to "think-with" because of its imperviousness to the senses. The (mis)conceptions and shortcomings of electricity as responsible for a lack of recognition of electricity's agency which is argued as limiting potential energy future and turn to further electrification (Abram et al. 2019). Before establishing the issues in Western philosophy's understanding and relationship of electricity, and the electricity grid, here are basic notion of electricity necessary to understand electricity's place within the context of the current energy crisis.

It is worth revisiting the textbook definition of electricity which often begins with the classical conception of an atom. An atom is made of a nucleus composed of neutrons (neutral charge) and protons (positive electric charge) orbiting around the nucleus composed of electrons (negative electric charge). The U.S. Energy Information Administration (EIA) website defines electricity as "the flow of electrical power or charge" (2022). The flow of power charges is a force attracting free electrons either by magnetic field, friction, or chemical action (Côté and Ouellet 2000). The movement of electrons between atoms is electricity. Electricity is an inherent component of the natural world and represents one of the most extensively employed energy forms (Bodanis 2006; EIA 2022). Static electricity is present in nature. Its most common form is lightning which occurs when an imbalance of charges results in electrons to shift from one atom to the other to bring back balance. Electric current, also known as domestic electricity, has been technologically engineered for human purposes 140 years ago (Abram et al. 2019). Electric current is the continuous movement of unbound electrons, within a conductor, as they transition from one atom to another in a generally consistent direction (EIA 2022). Electricity is a second energy source as its generation depends on the conversion of a primary energy source. Most conversion demand an electric generator, but not all, for instance solar energy. Primary energies come from renewable or non-renewable sources. Renewable energies come from natural resources that earth restores perpetually such as the sun, wind, hydroelectricity, tidal, and biomass - organic

materials that produce heat or fuel. Non-renewables are resources that were formed hundreds of millions of years ago, and will run out such as natural gas, coal, and crude oil (Paquette and Henriquez 2020). When electricity is converted for heating or motion (that primary energies can provide) electricity is an energy carrier (Ibid).

In the edited collection *Electrifying Anthropology: Exploring Electrical Practices and Infrastructures*, anthropologists of electricity point out that electricity generation is only one small fraction of electrification which depends on its infrastructures - the grid for instance (Bakke 2019). To imagine an energy future that is greener, more just, and efficient, electricity and its infrastructure must be accounted for, and we should listen more to what infrastructures are "saying". (Mis)conceptions and shortcomings mostly result from electricity as being an invisible and inaudible "non-thing" that is gate-kept on marketed as a consumer good or commodity. These aspects require a feminist approach to recognize electricity's agency.

Male dominant STEM field

The disciplines of science, technology, engineering, and mathematics are unfortunately as of today still dominated by men. The energy sector, the field of electric engineers are therefore still dominated by men. Even sound art, and electronic music performers that succeed are mostly men. The lack of women's presence in the field, as anthropologist of electricity Gretchen Bakke (2016) noted, "in all [her] research into the grid I have never heard a utility customer referred to in the feminine. When speaking of the users of electricity, the (mostly) men who make the system work, and the (mostly) men who push at it and try to invent a way beyond it, imagine a nation of users who are also men. This is necessarily only ever half true" (222). Furthermore, it has been pointed out by the Professor of Design and Emerging technologies Sarah Pink (2019), that the field of electricity and energy might be nourished by an ethical and technological approach to electricity. On another point, as noted above in the introduction, Kinder (2021) has written about invasive and extractive infrastructures of settler colonialism and criticized the appropriateness of nature's resources for benefit of society. Kinder (2021) has stated that "Violence against the earth begets violence against women" (70).

Electricity's agency

As the streets became lit at night, a phenomenon coined by David Nye (1996), the "electricity sublime", became notable. Electricity sublime describes the amazement of the technological development created by humans (ibid). Simone Abram, anthropologist, (2019) describes the "sublime" as being story from the past as the following 140 of electricity domestication, generations who grew with electricity became used to technological development as dependant of electricity and have forgotten how the domestication of electricity was once, not so long ago, enabling of nowadays technology and the feeling of "awe" can be completely forgotten. What is astonishing for one person may be commonplace for another. Scott McQuire (2005) restates the sublime by describing how electricity has been "been a source of profound wonder from the first moment of its recognition" (127). McQuire (2005) notes the changes light and electricity allowed in people's living environment which resulted in rapid adoption of electrical system. He adds that electricity has significantly change the rural and urban spaces by changing subsequently the appearance of space in the utility of cities and social lives (McQuire 2005).

Another anthropologist of electricity, Dominic Boyer, describes the natural state of electricity as the location of its agency in "the space it occupies in human bodies, in multiple species for its 'living' characteristics" (Boyer 2015, 532). Casper B. Jensen (2019) discusses the "emphasis on non-human agency" that echoes with science and technology studies and demonstrate anthropologists' reorientation towards new materialism and "object-oriented ontology to learn to work with the 'force of things' that has the power to induce a stronger ecological sense" to people (123). Thus, electricity is described as "not alive yet not deprived of all life" which enables reconsiderations of ethics (Abram et al. 2019).

While humans have managed to produce, distribute, and use electricity, we do not control which electrons goes where and which is used for what because "all of the electrons are going everywhere at once" (Bakke 2016, 26). The way it is framed by electricity distributors present it as if wind will power you house, but when different source is integrated to the big grid, the distributor has no control over the actual source powering your house (Bakke 2019).

The intricate nature of electricity its agential capacity: "it is almost invisible, yet it lights millions of homes; it is formless, made of infinitely small moving electrons, yet it flows through gigantic static structures; it is destructive when passed through the body, yet

it breathes life into cities and states" (Loloum 2019, 183). Also commenting on the nature of electricity, Billie and Sørensen (2007) have described electricity's agency as being more than an energy source, but also an energy transmission that has an impact on life, from biological nervous systems, to social, political, and material transformations in numerous contexts. Electricity can shape ontologies and be influenced by them as well.

Invisible and forgotten energy infrastructures

Although electricity can be considered the "foundational apparatus upon which the experience of modernity has been constituted since the late nineteenth century's" (Boyer 2015, 532) and "remoteness, conduction, insulation, and sensorial subtlety are not properties of electricity as such, but only of the way in which it has been engineered during the machine age to support projects of large-scale control over people and resources" (Anusas and Ingold 2015, 548) it is often taken for granted. Western societies' reliance on vision, the remoteness of electrical power stations and other infrastructures, the invisibility of the movement of electrons and the fact that the process is confined in wires make electricity easily forgotten (Boyer 2015; Anusas and Ingold 2015). As Susan Leigh Star (1999) claimed, infrastructures usually become most visible when they collapse. Science and technology studies stipulate that "technological systems tend to fade from view, becoming invisible in front of our eyes or under our feet" (Jensen 2019, 123). The challenge of comprehending the direct connection between humans and electricity arises from the concealed nature of electricity consumption, generation and delivery and the extensive quantity of materials required for its production. Solutions to counter the energy crisis demand a shift of our focus to the material apparatus of the power network, where the intricacies of this relationship become more apparent (Shin 2019; Bakke 2019).

Gatekeeping

Canay Özden-Schilling (2019) argues that the exclusion of consumers from the big grids in decision-making and data management is ongoing in the transition towards renewable energies in the US. She stipulates that the domain is gate kept by experts and claims we need to rethink our approaches to electricity including data, infrastructures, and expertise. Özden-Schilling (2019) introduces the 1930s "war of currents" when Thomas Eddison and Nicolas Tesla favoured opposing systems of alternate (AC) and direct current (DC) to sell electricity in the most profitable way. Özden-Schilling focuses on the impact of the organization of electricity as the 'big grid' in the United States that made citizen consumers and a handful of providers started making profits while remaining isolated from

democratic decision-making. Although not all countries or regions function with a national grid, it is the most common organization in industrialized countries, even though its management varies from monopoly producer to different administrative units. Özden-Schilling defines the grid as an entire system of equipment from the hardware to the software that allows electricity's generation and supply, as well as an infrastructure composed of "stronger and weaker transmission lines and intersection points where electricity can be injected and withdraw" (2019, 163). The grid is really composed of multiple grids. According to Özden-Schilling, issues of domestic electricity are hardly accessible to the general population because are gatekept by expert with a vocabulary inaccessible (2019). She argues that the exclusion of consumers from the big grids' decision-making and data management is ongoing in the transition towards renewable energies in the US. She stipulates that the domain is gate kept by experts and claims we need to rethink our approaches to electricity including data, infrastructures, and expertise to make them accessible.

One of the trends in energy/electric transition popular in the United States since the Northeastern Blackout in 2003 is the concept of 'smart grid'. This refers to the fact that electricity can be coupled with information. Özden-Schilling (2019) argues that electric futures "which have been recently depicted in engineering circles as hinging on an axis of intelligence (i.e. future smart grids vs. contemporary analogue, or 'dumb', grids) depend, in fact, on understanding where the big grid came from and what alternatives it might have" (162) As the "smart" grid results from the blackout justified by a smarter and bigger grid that should compensate the one that was "mismanaged" (ibid).

The grid is enhanced with communication and automatic sensing technologies. This is new research and policy agenda aiming to upgrade the grid into a digitally reorganized form as well as reconnecting it to information travelling in real time and spontaneously (ibid). While it may seem that the digital age relates to the study of the electric grid – it is in fact the electric grid that inspired the basic leading to the digital age (ibid). Transitioning to an increased data collection of information on people's consumption of electricity after the 2003 Blackout to prevent failure and better manage the grid left critical and feminist voices due to its surveillance out of the conversation for our energy futures as it relies on the "extension of the grid both physically and digitally is associated with the idea of a more decentralised organisation of the grid that connects renewable energy sources to the grid in a way that potentially all nodes in the network are able to produce, use and store electricity.

Yet it is not possible to know what electrons come from which source of power generation. Hence it is a misconception to think that the expansion of electricity transmission because we must keep in mind that extending the grid by relying on big data is also part of the problem and leading to pollution. Özden-Schilling argues that "our electric futures, which have been recently depicted in engineering circles as hinging on an axis of intelligence (i.e., future smart grids vs. contemporary analogue, or "dumb", grids) depend, in fact, on understanding where the big grid came from and what alternatives it might have" (Özden-Schilling 2019, 162).

Electricity is (not) good to 'think-with'

The grid is the supplier of electricity and a material condition for its delivery, which frames electricity as a common good accessible through the grid. Invisibility and forgetfulness of electricity makes it hard to 'think-with' in Western philosophy (Bakke 2016; 2019; 2020). The productivity chain necessary to produce, distribute, use electricity, and make profit from has been rendered invisible conceptualized in a way that ignores the ways electricity and its inseparable infrastructure function differently from other marketable products because it is sold in time of use and not in amount (Bakke 2016). Electricity is a force and a flow – a base load is necessary to maintain the grid. Most consumers no not know what devices consume electricity the most and when or how they could diminish their consumption (Beaulieu 2019). Consumers do not tend to question electricity prices too much because they rarely have the options to switch to another distributor (Bakke 2016; Beaulieu 2019). As electricity bills are paid monthly without any understanding to what it represents is a key reason why we barely "think" about electricity.

Back in the 1890s', Insull, unlike Edison who treated electricity as a product, understood that electricity had to be sold over time and at all times instead of in a quantifiable amount that encourages the market to make electricity a good to be sold comparable to a box of milk (Bakke 2019). Insull's business model marked the history of electricity in the market as sold by a monopolize company in terms of the time of usage. It is continuously made, distributed, and used 'in the same singular millisecond' because of ongoing issues of efficient storage (Bakke 2016, 17). Since electrical generation is done in terms of estimate of usage, when the power is used more than planned, companies must import electricity or may face blackouts. In the era of transitioning to renewable energies, this is one big issue facing decarbonization. Renewable energies are less stable as they mostly depend on the weather, our incapacity to store electricity thus challenge our ability to rely on renewables

such as solar, wind, and tidal. All and all to say that since the 1970s' electricity prices went up while consumption down and legislation started to dismantle the monopoly system integrated by Insull (Bakke 2019). The battery may be the best linguistic and physical tool to objectify electricity and finally make it 'good to think with', but it certainly entertains (mis)conceptions regarding electric futures and its workings (ibid). Furthermore, global commodity chain is amoral as argued by Eben-Kirksey and al. as "extract[ing] commodities from their social and natural histories of production and make them equivalently exchangeable for cash. This dependence on cash exchange to identify the goodness of a commodity accounts for the reputation of global commodity chains as irresponsible in relation to both labor and the environment. They do not respond to issues of human or nonhuman welfare" (2014, 106).

Bakke believes one of the main issues when thinking with electricity is its objectification. Through objectifying electricity which is difficult because it is a non-thing that is attempted to transfer into a thing, it defies the "business comfortable for object-oriented institutions" model that characterizes our economic and consumerism world (2019: 38). Therefore, an alternative to this objectification looking for ways to make batteries through chemistry is to look for a way to connect renewable energy (wind) to hydroelectricity that involves working with electricity and wasting less of its native potential.

In the introduction of the collection book *Electrifying Anthropology: Exploring Electrical Practices and Infrastructures,* the editors make an insightful contribution to understand fully Bakke's approach to electricity. They mention that Bakke (2019) and Coleman (2019) are both concerned with "approaching infrastructures as embodiments of collective entities that encompass both human and material elements" (Abram et al. 2019). Bakke insists on the ease of conceptualizing and discussing tangible aspects such as the physical infrastructure of the grid and electrical appliances that favor an understanding of electricity through its effects (ibid). The focus on these effects resonates, as the editors compare, to the notion of "being affected" that shifts to relational dynamics rather than fixed objects. The explain that "Vinciane Despret, for example, has built on Haraway to think about being affected by something only partially within reach. In Despret's and Haraway's renderings, being affected is not about empathic relationships but about 'creating the possibility to inscribe oneself in a relation of exchange and proximity that has nothing to do with identification" (2016 in Abram et al. 2019, 13-4).

1.3 Electric art: sensorial happenings in the more-than-human worlds

Art in natureculture

Eben Kirksey (2014) describing the *Multispecies Salons* defines bioart as "an aesthetics of attention, responsibility, and care that has been developed by bioartists who use living entities in their works of art" (Kirskey 2014, 186). He refers to these artworks as resulting in different kind of emotions that may be positive or not such as "guilt" or "satisfaction" (186), but that it is in these "ambiguous emotions" that a certain "to confront uncertainty and to engender responsibly in an embroiled world of permeable, distributed biota" (186). In this sense, Kirksey explains, that the gallery became an "an ethnographic para-site where artists, biologists, and anthropologists explored accountability and responsibility in the entanglement of knowing and being" (186). This gallery was a meeting point for intellectual to discuss the changes of life conditions in the age of biotechnology. Kirksey uses the notion "work of art" in describing bioart which is described in the following section.

Work of art

Vinciane Despret (2016) coined the notion of "work of art" implies that it is the relationality between the artwork and the artists that makes the work of art. In the chapter "Do Bird Make art?" of her book *What Would Animal Say If We Askes the Right Questions?,* Despret investigates whether a bird's nest are bird's doing their own work of art. The birds' reappropriation of human waste in the creation of beautifully made nest tend to question the notion of intention art must have. Looking at the complicated agencements which translates to assemblages, she looks at the relation between the work of art – the nest and the potential artist – the bird. She argues that "the artist is not the cause of the work, and the work alone is not its own cause" (121), in this assemblage, "the artist carries responsibility" as the bird collects the material for the creation of the nest (121). Said otherwise, the artist "is responsible in the sense that he must learn to respond to the work, and not to respond to his accomplishment or his failure to accomplish such work" (121). Therefore, it is a sort of collective enactment where the artist is not the only responsible for the work, but in which the work of art is not its own cause either. Turning to the literature of electrical art, it is interesting to keep in mind the notion of work of art within assemblages.

Electrical art and sensorial happenings

Peter Weibel (2022) situates electric art starting at the end of the 19th century and the beginning of the 20th century. This movement was sparked by the apparition of electric light and initiated the use of electricity in art (2022). Unfortunately, it remained a marginalized form of art in the post-WWI decades corresponding to a rigid official definition of art where abstract art was unwelcomed. The domestication of electricity – the arrival of electricity in the everyday, introduced new art forms – electrical art, which includes, according to Weibel (2022) cinematography, kinetic art, and later cybernetic art, and computer art. These art forms are generated by or centered on electricity. Weibel adds that electric art commonly implies a multisensory and participatory experience. Weibel states that the freedom to navigate the art projects according to one's own pace can be seen as "a reminder that art, like life, is in perpetual motion, constant evolution and has no limits" (2022, 13). Since art is often a sensorial experience, electrical art has created the possibility to play with sound, light, movement, and eventually filmmaking, thus forms combining multiple senses. This destabilized the static traditional art of paintings or sculptures. For this reason, it is interesting to focus on other senses than vision that are targeted by sound art.

To further examine sound art – or more widely art that is consumed primarily through the sense of hearing, I draw on Gunaratnam's (2013) conception that hearing changes bodily sensibilities and defy bodily boundaries by penetrating – sound waves or vibrations reverberating along …. [describe pathways] literally touching the body from the inside. Discussing relations between the visual and the sonic, Jonathan Sterne (2003) traces the "audiovisual litany" which is the domination of the visual by the sonic, back to Christian theologies and still characteristic of western philosophy. Music is thus usually associated with an immersive and affective experience, while the visual is considered to be at a distance, closely associated with objectivity western ocular centrism, an apparent exteriority linked to thought and conception, making it a more 'rational' practice in Western dominant thinking (ibid). This ignores the activity and partiality of the visual systems, organic or not which resonates with Haraway's (1988) metaphor of vision in which the "god trick" represents deploying a "conquering gaze from nowhere" (581). Vision, therefore, is learnt "technically, socially, and psychically" (583), so without accounting for your own location, it is not possible to produce situated knowledge. Furthermore, hearing requires practice of listening. Drawing from Tina Campt (2017) from her book *Listening to Images,* the practice of listening to images is an attention to the "lower frequencies" that audiologists describe as

"infrasound: ultra-low frequencies emitted by or audible only to certain animals, such as elephants, rhinoceroses, and whales" (7). Campt argues those practice of listening to not produce sounds to be heard, but frequencies that are "*felt* in the form of vibrations through contact with parts of the body" (7). Sound therefore is more than what is heard because it is composed of "vibration and contact" (7). Bennett (2010) in her book *Vibrant Matter*, attends to practice of listening as she investigates the blackout of New York City in 2003. She refers to voices of things in or as an assemblage composed of the infrastructures of the grid as she says the grid speaks. In its neglect that occurred from cutting companies cutting the budget necessary to cut tree branches, the already damaged grid through its "voice" and broke down. In this sense, speaking does not require words, it is a way to attend to nonhumans others that Bennett considers as assemblages.

Affect

Gilles Deleuze (2003) notion of affect as "sensations" and "passage" passing experienced by bodies and traveling from one body to another. The concept, of affect reworked by Gabrielle Ivinson, (2021) regarding post-migrant theatre is insightful to study how works of art move the audience as affects materialize sensations beyond spoken words and texts. Affects can be considered as the emotional energy or force that moves or affects bodies. Affects are felt through a sensation that the body experiences and reverberate between bodies (Ivinson 2021). Ivinson works with affect because "what moves as affects travels between bodies, for example, between an actor's body and the collective and individual bodies of the audience" (1). The second dimension related to affect is on the affected body. Vinciane Despret (2016), informed by Donna Haraway, claims that being affected is not about is not about empathic relationships but about "creating the possibility to inscribe oneself in a relation of exchange and proximity that has nothing to do with identification" (Despret 2016, 17).

1.4 (Re)thinking embedded in care, response-ability and responsibility

Work of art's potential

To explore the potential of works of art to provoke (re)thinking of participants/listeners relationship and conception electricity, this thesis draws from feminist epistemologies et concept of feminist technoscience to examine how the artistic projects offers new ways get to know electricity, to care, become response-able, responsible, and how is the body affect.

More-than-humans, nonhumans, and humans' entanglements in natureculture

Haraway (1997) works with the notion of natureculture that represents the inseparability of the technological and the organic along with the animal and the human. Natureculture "require a form of ethical commitment that learns from the decentring of the human" (Puig de La Bellecasa 2010, 158). Agency is attributed not only to human but to nonhuman actors too. Puig de La Bellecasa's notion of entanglements (2010) which is based in an understanding of the world where all things (and non-things) are interconnected and interdependent. As this thesis will share the wisdom and knowledge of Indigenous people, I want to introduce kinship, as I am thankful for Indigenous knowledge that I should carefully attend to borrow as a white settler. Furthermore, Laura Hall (2015), offers further insights guiding the type of relationalities necessary for (care)ful attendings to other. Turpin shares Indigenous stories ways of living in care based "in Anishinaabe culture, this gifting is described by Jill Doerfler, Niigaanwewidam James Sinclair, and Heidi Kiiwetinepinesiik Stark "as a relationship between people, animals, spirits, and other entities in the universe, given in the interests of creating ties, honoring them, or asking for assistance and direction." The authors continue: '[O]fferings are acts of responsibility. Making one includes acknowledging value, promising respect, and affirming the presence of another, […] forming what is hoped to be a mutually beneficial partnership, not only for participants, but for the universe around them" (2013 in Hall 2015,2 89). Those gifts are giving back to who and what already gives in kin. Furthermore, Donna Haraway (2011) in *Speculative Fabulation for Technoculture's Generations: Taking Care of Unexpected Country* sees "kin and alien colonist" in Patricia Piccinini's work of bioart as the "oddly familiar critters" (95) resonate as part of the artist work to propose "decolonizing ethic indebted to Australian Aboriginal practices of taking care of country and accounting for generations of entangled human and nonhuman entities" (99).

Care and responsibility and response-ability

The concept of care relates to webs of relations. Bird and van Dooren's (2011) ethic of care exists through a 'fellow-feeling' and interconnectivity in our multispecies world. Maria Puig de la Bellecasa (2010) defines care as "an affective force contained in the phrase 'I care' – associated to love, responsibility and somehow to 'concern' for another's well being" (165). Set in ethical doings, "obligation 'to care' […] has material consequences" (ibid) and require collective caring for the collective good. When in relation to one another implicating notions of care and responsibility, it can lead space for Zoe Todd's (2017) notion of ethical relationality - active principle that emphasizes on the importance of relationship not only to one another, but also to all relationships we have with everything around us. It is also referred to as interspecies care and it is a concept centre to Indigenous knowledge and practices resisting colonialism. This notion of ethical relationality that emanates from the notion of care is what opens the door towards new onto-epistemological thinking. The concepts care and responsibility are mutually related as to care requires feeling accountable for one another. Donna Haraway (2011) claims there is no care or vulnerability without responsibility. This thesis is strongly inspired by the approach bioart entails toward artistic practices and what they represent (Kirksey 2014). For instance, drawing on Haraway's analysis of Piccinni's "oddly familiar critters" are inspiring new ways to care for what we create by making viewers feel for the critter and become attached to them in their invocations of techno creatures reminding human and Australian animals people know. (Haraway 2011, 95). I read those creation in the art works that are created, but I extend it to the infrastructures of electricity that we should care for (Haraway 2011).

Drawing on Donna Haraway (1998) and Astrid Schrader (2010), responsibility entails the accountability of the researcher's apparatus of bodily production. Responsibility is therefore in multiple relationalities in this present thesis and is defined by Hird (2013) as human vulnerability encompassing visibility and remembering, as well as a responsibility to human and nonhuman. Schrader (2010) and Haraway (2008) work with the notion of response-ability defined by the capacity to cultivating response that decenters the human from the problem and the solution – a recurrent tendency in climate change's discourse set in the Anthropocene (Haraway 2008). Schrader (2010) studies on the *Pfiesteria,* a microorganism that kills fish under certain conditions requires responsibility from the part of the researcher to "maintai[n] *Pfiesteria'*s ability to respond to their experimental probing, that is, their response-ability" (277).

New ways to know

Drawing on feminist epistemologies, the concepts previously mentioned must come together in the apparatus of knowledge production. Regarding the artworks analyzed as research process elaborated by the two women artists, in this final section of the literature review, I establish how this thesis analyze the research methods. Keller's exploration of the work of biologist Barbara McClintock in *Feeling for the organism (*1983), argues that McClintock differentiates herself from others natural scientists because she feels for the organism in the sense that from learning for the organism, she becomes aware of any changes and variations. This requires a patience that defies Western's concept of time and productivity. By allowing her research's subject to affect and change her she fosters unconventional ways of knowing that occur from the capacity to be surprised by the research that allow her to "know them intimately" which "extend[s] her vision" (196). In getting to know so closely the research subject it limits the scope of the research which produces partial knowledge (Haraway 1988). Partiality makes the apparatus of knowledge produced 'objective' and an account for the researcher's positionality. Partial and situated knowledge need "the object of knowledge be pictured as an actor and agent, not as a screen or a ground or a resource […] in his unique agency and his authorship of 'objective' knowledge" (592), and as an "active, meaning-generating part of apparatus of bodily production" (595). The object and the researcher are entangled in the apparatus – the dispositive of bodily production. Situated knowledges work like an apparatus of producing "[…] a more adequate, richer, better account of a world, in order to live in it well and in critical, reflexive relation to our own as well as others' practices of domination and the unequal parts of privilege and oppression that make up all positions" (579). The ontological, epistemological, ethical, and political constitute situated knowledges and apparatus of bodily production that requires a kind of situated and located vision from the researcher.

1.5 Conclusion

This literature review presented basic notions of electricity useful to understand existing misconceptions on electricity and its infrastructures by anthropologist of electricity that argue for a more ethical approach to electricity. Furthermore, I introduce some literature on sound art, electric art, and bioart to present the ways in which art affects the body. Finally, insightful concepts drawing from feminist and Indigenous epistemologies including Haraway, Schrader and Hall investigate notions of responsibility, response-ability and care that requires nurturing of our relationalities has been reviewed.

This thesis is situated at the intersection of feminist epistemologies, new materialisms approach on art studies, feminist science and technology studies, environmental studies, and anthropology of electricity. It is theoretically embedded in concepts found within human-animal studies, Indigenous epistemologies and used by feminist theories. The study of art projects understood as deploying feminist epistemology research framework and methodologies of the more-than-humans world focuses on its impact on participants/listeners by investigating the process of art making, agential capacity of the works of art and the affects and emotions experienced. Concepts of response-ability and responsibility in the interactive relations of participants, the works of art, electricity, the artists, and the environment make the basis of the argumentation.

Chapter 2 Methodology

2.1 Research questions and sample

This thesis poses the following research questions: Can electricity in art evoke new ways to know and understand electricity? How is the production of new ways of thinking electricity's beneficial in terms of thinking with the concept of care and responsibilities in the kinships of electricity with humans, nonhumans, and the more-than-human world? What can electricity in art teach the general population about our conception of natureculture and break the binary? The main research question is as follows: how can works of electric art challenge the relationship of ordinary people to electricity? To address these questions, this thesis is conducting the analysis of two selected art projects: *Electrical Walks* by German sound artist Christina Kubisch and *J'aime Hydro* a documentary play and podcast written by Christine Beaulieu. In a research drawing from feminist epistemology and anthropology, electric art embeds the thesis in feminist science and technology study that offers interdisciplinary research focusing on the sensorial and emotional experience art provokes. Attending to art allowed me to work with concepts from feminist theory such as affect, responsibility and care to look at electricity which is relevant for ecofeminism and feminist technoscience. Art is a sensory experience that can be studied from its research elaboration by the artists to the sensation it provides to its participants and the impact of such sensations.

The art project *Electrical Walks* by German artist and performer Christina Kubisch can be consulted on the website ElectricalWalks.org. Described as participatory art and sound art, the series of *Electrical Walks* started in 2004 and have now happened in more than 80 cities. The immersive experience of *Electric Walks* presents participant to the (in)audible world of the magnetic world. Equipped with head-built headphones that work by electromagnetic induction, the headset captures the sound emanating from electrical devices making it accessible through hearing. Since the 80s', Kubisch has been working as a sound artist as a performer, teacher, and composer. There were not many women composer which was very frustrating for the artist (Kubisch 2018). The walk is for Kubisch an investigation of people's reaction which informs her composition as the participants becomes composers themselves and allows her to make sound maps of cities. The maps organize the walk and allow participant to rent the headset during the weeks after the experience to discover the magnetic world further. I chose *Electrical Walk* because from the moment I participated to the walk, I knew it would be part of my master's thesis. Enabled by the headset to hear and feel the vibrations and signals of electromagnetic fields made me feel small and ignorant in

an amazing sense that sparked by intellectual interest. I wanted to examine the potential connection with the more-than-human world and its possible impact on participants' relationship to electricity.

The second artwork is a documentary play *J'aime Hydro* (I love Hydro) which is a theater play that was written and recorded to become five episodes of a podcast and an online book. This thesis only analyzes the podcast and the play because I wanted to select two art projects that proposed an auditive experience that would then affect the visual. The theater is a performance art, while a podcast is digital art. It was written and acted by Quebecer, French-speaking Quebecer actress and playwright Christine Beaulieu. The first format of the play contained three episodes presented to the public in 2016, and the latest version contains five episodes lasting about five hours and played from 2017 to 2022. The play's staging is minimalist so it could be adapted as a podcast easily, which was the goal from the beginning. The documentary play is the story of Beaulieu as she takes on the role of researcher in a citizen inquiry on Quebec's electricity supplier, Hydro-Québec, and its relationship with Quebecers. I selected the play to present different energy challenges from Europe and offer an experience, still revolving around hearing and listening, but in a different perspective. As I became interested in electricity from the walk, listening to the podcast made me feel understood in my struggle to capture the complex notions of electricity. I also felt compelled to gather to my thesis pieces of my years spent in Prague and my home, Québec.

The two art projects inform participants on aspects of electricity through affect, but one is from the text, the play; and the other is based on the sensorial happenings from the walk.

2.2 Methods and analysis

To analyze the two art projects, my thesis uses a combination of qualitative research methods that combine case studies and content analysis that provide deep understanding and analysis of the object of study (Snape and Spencer 2003). Each artwork is a case study that generates data on the artists, the participants' experience, my experience, and reflection which give a thorough picture of what art can do. Case studies allow this research to propose interdisciplinary connexions on art, feminist theory and anthropology that can be useful for future analysis of feminist electric art (Reinharz 1992). The methods of data generation include participant observations of the people who had experience the art projects, my own field notes from *Electrical Walks* and textual analysis of *J'aime Hydro*'s text, interviews

with people who had experienced the art projects – one for *Electrical Walk* and four for *J'aime Hydro*. I also draw on existing materials such as interviews or conferences with the two artists, and articles commenting on the art projects. As follows, I describe each method of data generation and its appropriate method of the data analysis.

The questionnaires of my interviews are included at the end of the thesis. Refer to appendix A for the questionnaire of *Electrical Walks* and B for *J'aime Hydro.* Note that questionnaire B is a translation because the interviewees were French speakers. The interviews During the interviews, the questions were oriented towards affects, emotions, thoughts, and reflections that participants and listeners had experienced during their experiences of the art projects. My interview for *Electrical Walk* was with a doctoral candidate in Art History. My sample for *J'aime Hydro* was constituted of three people in their late twenties, Vincent – physiotherapist, Émile – construction worker, Patrick – social worker student, and Annie – social worker, who is in her fifties. All my interviewees received a list of questions prior to the interview which allowed my conversation with those I interviewed in person, Émile and Anna to evolve and change the course (Ryan 2009). To this end I formulated most of the questions as open-ended to get at "the interviewee's personal experiences of the topic in question" (Bridges et al, 2008 in Ryan, 2009, 310) which is essential for my interest in the emotions and the perceptions the participants of the art projects. Even for the three interviews that I conducted through social media, open-ended questions gave them the opportunity to provide meaningful examples of moments in the play *J'aime Hydro* that marked them specifically. To analyse the data generated from the interviews, I transcribed all interviews, and I identified connections, or oppositions in the experience of each participant and listener. This transcript and annotation helps analyzing the qualitative data in a rigorous and systematic way to later interpret it will concepts of situated knowledge, care, responsibility and response-ability that draw from feminist epistemologies (Lathlean 2006 cited in Ryan 2009). I also reflected their perspective with my own observations. The interviews for *J'aime Hydro* were very insightful to gather information on the live performance of *J'aime Hydro* which I did not attend. Comparing what I have learned from the participants Vincent, Annie and Patrick who have witnessed the play help me get a better sense of the affect, emotions, and energies of the live performance that I could then compare with newspaper articles.

I could only perform field observations of participants during *Electrical Walk,* but I reflected on my experience with both art projects through extending rewriting of the

artworks' concepts that had reverberated with concepts of feminist epistemologies I wanted to analyze them with. My observations of the walk were focused on the other participants' movement and facial expressions. As most participants were Czech and the limitations of talking communication by the headphones forced me to attend to their reactions: were they excited? Uncomfortable? Surprised? Annoyed? Lively? Those were all signs I was looking for so I was studying their bodily movements as they would walk forward, back, slow, fast which was inspired by Gabrielle Ivinson's (2021) work with affect and the young girls who she could not interview verbally so attended to affect. In a similar matter I tried to find out what bodies "seemed to be communicating (7) I took field notes which I then transcribed to a text so I could analyze my experience and reflect on my takeaways. My field notes also contained precious information provided by the artist, Christina Kubisch, who I studied as well in her passion and excitement for the walk and the discovery of signals. My equivalent of my field notes for the play was my attention to the text. Before realizing that there was also an e-book version of the play, I only knew the podcast. Therefore, I transcribed most of the podcast. When I listened again to the podcast, I could take my notes and edit them. I meticulously studied the text, being attentive to Beaulieu's research, struggles, emotions, findings which helped me relate key points with the interviews. For both works of art, I paid attention to my experience, the participants' and, the artists' research methodology in developing their art.

To complement my data on the intentionality, politics, and research methodology of the artists, I found ways to supplement the fact that I had no interviews with them. This is when I turned to the content analysis of existing material. I consulted either panels or interviews to get to know the artists. The most relevant one's I have consulted and analyzed are as follows. For *J'aime Hydro*, I consulted an interview with Guillaume Wagner, a comedian from Quebec (2019) in which they discuss the play for almost two hours. This was very helpful to understand the approach she used to write *J'aime Hydro,* compare her position on electricity from what I had heard in the podcast. It helped me contextualize further Beaulieu as an actress, write, and now semi-expert as a spokesperson for citizens within energy issues in Québec. I also consulted a panel held at the school of engineer, La Polytechnique de Montréal, where Christine Beaulieu, Gretchen Bakke, and Louis Beaumier (2019) discussed about North American's relations to electricity where they mostly compared Quebec and the US electrical systems. I analyzed Bakke and Beaulieu's conversations in identifying elements relating to electricity's objectification in relation to

Beaulieu's play. For Christina Kubisch, I mostly analyzed a panel discussion organized by Sonic Acts (2018) on her experience as a sound artist who has worked with electromagnetic investigations for forty years. Again, I took notes on what she intends to generate to participants through the walk. For both artists, I analyze their intentions and their approach to electricity.

For each method of data generation, I applied the same approach of data analysis based in transcription and further considerations with my theoretical concepts developed in the literature review (Lathlean 2006). It constituted of taking notes, mostly on paper, reworking the notes, and come up with graphs of connections between affect, artists' intentions, my observations, the evolution of my position on the art project as I was learning more about the artists and its participants and listeners. Furthermore, as performing auto-ethnography in terms of looking at my own experiences and observations from the art projects, the data gathered from interviews, content analysis of pre-existing materials and field notes from observations of other participants allowed me to reflect on my positionality along my research a remaining aware of my experience which helped me stay rigorous in my analysis of the data (Tod 2006 in Ryan 2009). Content analysis inspired from media content analysis of MacNamara (2005) of field notes and the text of the play as well as analyzing my transcriptions of my interviews and pre-existing ones were analyzed to "examine the relationship between the text and its like audience meanings" (5). This occurs in an understanding that media texts are "*polysemic* – i.e. open to multiple different meanings to different readers" (5, emphasis by the author), which requires taking into consideration the meaning of the audiences according to their positionality as social beings (ibid). Therefore, content analysis demands for the researcher multiple "readings" of the text to interpret it in multiple ways and confront my position during the analysis (ibid).

2.3 Positionality

While informed by the concepts of responsibility, response-ability and care discussed in chapter 1, the analysis of these art works necessarily also draws on my own interpretation and experience with these artistic projects. Here I present a reflection on my own feelings and approaches to these art projects that traces the changes in my perception of electricity that made me aware of its agential capacity (Boyer 2015). This reflection is produced through autoethnographic writing and in in depth analysis of the intentions of the artists in their work through consulting one interview of Christine Beaulieu, one panel in which

Christina Kubisch presents her work with electromagnetic induction and repeated attendings to the reflection the art works provoked to the five people I interviewed.

My gained interest to electricity's capacity of agency is similar to what Myra Hird (2013) claims that her desire to know waste is part of her self-identity as a Canadian – Canada being one of the biggest producers of waste per capita worldwide. Like Hird, my self-identity as a Quebecer, Quebec being one the biggest producer of hydroelectricity worldwide (Beaulieu 2019), I want to get to know better and explain the need to rethink our approach to electricity, but mostly how electronic art was for me a tool to learn to care for electricity.

Prior to visiting the newly opened Kunsthalle Praha in March 2022, I did not know what transformer substation of electricity was neither did I know it even existed. The exhibition made me feel ignorant. I never realized how much was possible because of electricity. I felt as if the exhibition made electricity alive, present. I wanted to understand more about its workings. Reflecting on my sudden desire to know more about electricity and feel closer to it reminded me about humans and the more-than-humans world entanglements (Puig de la Bellecasa 2017; Haraway 2008; Hird 2013). Especially Hird (2013), and her text on the ethics of vulnerability towards waste and landfills. Challenges related to energy and electricity was quite present Eastern Europe in March 2022 as the war in Ukraine sparked important worried for the future of energy for countries dependant on Russia. As a settler living in Tiohtiá:ke (Montreal, Quebec, Canada), unceded territory of the kanien'keha:ka (Mohawk), a place which has long served as a site of meeting and exchange amongst nations, I present this thesis in which I benefit from the territories on which invasive hydroelectric dams generate electricity I often take for granted. Hydro-Québec, the state corporation holding monopoly over generation, transport, and supply of mostly (60%) hydroelectricity within the province of Quebec is considered, for settler populations at least, as a common good, a national pride for francophones (French speakers descendent from Quebec's first colonization by the French during the 17th century), and a 'clean' renewable energy that does not need questioning. Not only did encountering electrical art made me realize how electricity worked, what it was ontologically, but also its socio-political context. I decided that I wanted to explore my relationship to electricity and how it was beginning to change from a slight contact with electrical art. I wanted to look for uplifting the future possibilities held in innovation and art.

Chapter 3: Affective sonorities in *Electrical Walks* by Christina Kubisch

3.1 Introduction

This chapter addresses the question how works of electric art can challenge the relationship of ordinary people to electricity by analyzing the *Electric Walks* designed and led sound artist Christina Kubisch in which I participated in May 2022. The walk made me wonder if these walks proposing new ways to know electricity and generate responsibility or "response-ability" (Haraway 2008)? The immersive experience to the magnetic world *Electrical Walks* procures an intimate discovery of the magnetic world that is both unsettling and exciting. For over forty years Kubisch became a renown and respected artist in her own right. In Kubisch artistic development, *Electric Walks* are composed after she intensively worked with sound, and performance through listening and recordings that she shared with the public through music, light and sound installations. The *Cloud*, which was exhibited for the exhibition *100 year of electricity in art* described in the introduction, is a tangible representation of the art experience Christina Kubisch has been giving people around the world through *Electric Walks.* Indeed, it requires the same headphones and induction technique, but the walk is an investigation that allows to discover vibrations and signals not recorded in cables but picked up. More specifically, the transmission of sounds occurs because it is made by built-in coils that respond to electromagnetic waves present in the environment (Kubisch 2022). In other words, the hand built wireless headphones amplify and make audible to the human ears the "acoustic qualities of the aboveground and underground electromagnetic fields" (ibid). Before *Electrical Walks*, Kubisch's sound installations did not use headphones but small cube amplifiers that participants had to hold near their ear. She wanted to free participant's hands and began working on wireless headphones that would allow more freedom of movement. While recording sounds for her cable installations with the newly built headphones without filters, Kubisch could listen to the signals her headphones would pick up that had been "annoying" her in her recording processes (Kubisch 2018). They were electromagnetic induction – "the mutual interaction of magnetic fields" (Weibel 2022, 32), picking up electromagnetic fields from digital and electronic devices. *Electrical walks* therefore offered special investigations that allows every participant, equipped with their individual artistic tool, to compose a melody from the picked-up signals varying in timbre and volumes from one place to another (Kubisch 2022).

This chapter situates the *Electrical Walks* as a walking methodology in a more-than-human world by drawing on and explicating the methodology of the Walking Labs proposed by Springgay and Truman (2018). The first section situates the methodology of Kubisch aesthetic walk in terms of working with and through humans and nonhuman entanglements. The second, sections examine the sensorial experience of the walk acts as "presencing" - rendering present, electricity through sound and making its infrastructures/devices audible and more intimately understandable. Furthermore, I explore how the sounds of electricity affect the body. The final section examines how the headphone in *Electric Walks* creates a space for electricity's capacity to respond. Drawing on what Schrader (2010) after Haraway (2008) terms response-ability, the walk can inspire new ways of conceptualizing electricity in (be)coming responsible. This methodology of working with the more-than-human world, attending to the sense of hearing and the affected body enable a space of response-ability and responsibility in (re)thinking relationship towards electricity. Empirically, the chapter draws on my fieldnotes from the *Electric Walk* in Prague in Spring 2022, an interview with art historian Anna Kodl, and existing interviews with Kubisch.

3.2 Becoming attentive to the more-than-humans world

Fitting as an aesthetic walking methodology, the artist's relationship to the electromagnetic waves, and the nature of the sounds, *Electrical Walks* embraces a feminist materialist and indigenous' formulation of human and nonhuman entanglements. To organize an *Electrical Walk*, Kubisch begins by researching sounds around the city. For four days, she wanders in the city and maps it according to the electromagnetic waves her headphones pick-up. She planned the itinerary of the walk starting at the Kunsthalle Praha, the private gallery that hosted hosting the *Electrical Walk.* She is constrained to initiate the walks at specific points because participants must pick up and bring back the headphones to the gallery which limits the itinerary. The first two to three days, she walks the city by herself and these first moments of discovery of the city and its sounds are her favorite as Kubisch (2020) recalls in an interview with fellow sound artist Woolsey. The restrictive meeting and end points of the walk require her to select the sounds she has identified to create a circular trajectory which forces her to leave out some sounds. She refers to the sorting out as a "hard" process that requires "hav[ing] to really limit them, and make a kind of choice, and kill [her] favorite electromagnetic babies and so on" (ibid). Kubisch is not only taken responsibility for the organization of the walk, but she also cares deeply for the sounds. Referring to the electromagnetic waves as "electromagnetic babies" and the picking process as "killing"

denotes of a level of kinship she experiences with electromagnetic waves. Kubisch expresses an emotional attachment to electromagnetic waves that resonate as kin which goes together with a practice of care for the sounds as part of the more-than-human world. The electromagnetic waves for Kubisch are more than picked up signals. I understand electromagnetic field transmitted to sounds from electromagnetic induction as "vibrating sonic materialities [that] are neither purely human, nor purely nonhuman" (Konturri and Tiainen 2023, 276). More-than-human vibrations is conceptualized as "partly enabled by humans making music, whilst, at the same time, they intensively connect to human body-minds, potentially reorganising and opening them to new sensations of collective being" (277) that correspond within feminist materialist work of aesthetic activism in art. Electromagnetic fields' sonority, tempo and rhythm remind me of electronic music and Kubisch creates the walk with the intention that participants create their own compositions through walking (2022).

The combination of walking and a process of co-creation enacted by the artists and the participants, and their electromagnetic environment procures an experience that marks the body and its memory (Springgay and Truman 2018). When mapping the city (see Appendix C, picture 1), Kubisch enables every participant to investigate the sounds and create art by composing and navigating the sounds on their own during the walk according to their position and speed. The mapping continues as Kubisch brings along a third party to get feedback on the fourth day of mapping the city to adjust the walk (Kubisch 2020). The Walking Methodologies in More-than-human Worlds, created by Stephanie Springgay and Sarah Truman (2018) understand walking as a methodology that "connects bodies, environment, and the sensory surrounds of place" (4). Kubisch's understanding of time similarly works within the more-than-human methodological frame. The walk is an encounter with an (un)known sensory world of electromagnetic field inform about happenings that denotes intimately the nature of electricity as a "force" and not as a thing (Bakke 2016). Kubisch deconstructs the idea of time as productive and future oriented. Although the time for the guided walk is limited, Kubisch's mapping of the city is not intended to serve only the walk(s) she guides. Indeed, the map is a suggestion, and her hope is for participants to come back to the gallery and rent the headphones and go for a walk by themselves (or with friends or family). She rents the headphones to the gallery for up to two months after the guided walk. It disrupts Western understanding of time oriented towards the future by acknowledging the past as she evokes how cities change from the evolution of electric devices. The walk also offers a way to challenge the idea of productivity that

demands to be fast and walk at a rapid pace in the cities always aiming to head somewhere. The walk is an investigation of the city that emphasising slowness to attend to the sounds, to explore the different vibrations. Slowness occurs from the moment people place their headset on their head until the end of the walk. This was evident in the field notes I wrote after the walk:

> "I immediately noticed everyone's pace slowing. I'm becoming attentive to the different frequencies picked up by our headset. As we entered the metro station Malostranska, Kubisch appoints us to get closer to the advertisement board lit by LED lights. I do not think I even knew that the panels were lit, I thought they were just glass boards with a poster that is changed every once and a while. Usually, if you go in the metro, you are passing through to get to somewhere. During the walk, every stop is significant. There must be four people at the same time walking around the panel. Moving their heads as close to the light as possible and moving away. Eyes light up; they pick up the frequency emanated by the light. Kubisch then points to another corner of the station. We come closer while others are still listening to the LED panels. I never thought I would be fascinated by an advertising board. We then tend our ears towards the sealing. They are cameras, communication devices, lights blinking. Little details that usually go unnoticed because they are not apparent." (2022, May 5)

In this extract, I register the changing dynamic of the group as electromagnetic waves begin to become audible. People slow down their pace, forget about the uses of the metro to listen to the sounds. This resonates with a talk given by Tina Campt in 2021 titled *The Slow Lives of Still Moving Images* in which Campt defines the concept of slowness as "moving, flowing, or proceeding without speed or at less than usual speed (diminished velocity) requiring a long time; gradual duration having qualities that hinder rapid progress or action (delayed development) registering behind or below what is correct (unachieved potential) marked by reduced activity (reduced exertion)" (Campt 2021). Campt has an understanding of time that accounts for the past, the present and the future. In multiple instances during the walk, she references the evolution of a sound's appearance and disappearances over the years. With some nostalgia for those disappeared and excitement for those still to come, as presented in the extract bellow. The walk incites participants to cherish the present as electromagnetic fields are constantly changing.

> Kubisch mentions how much Prague has changed in the past twenty years. Back in 1984, she tells the group, Prague was a tougher city with few tourists. She described it as a 'strange' city that included many 'dirty' places. One of the rare remaining 'dirty' places is the small tunnel between Charles Bridge and Karlovy Lazne. When places are disorganized, less regulated, the sounds encountered are intriguing. She

> visited the shopping Passage U Salamouna multiple times she says. I note how passionate she is and how contagious it is. There is an electronic LED ticker where letters are lighted up progressively to write a message. When I move close to the sign, I could listen to the electronic texts. It felt as if electric devices can communicate. I was discovering bit by bit this unknown sensory world in which electricity suddenly felt more than a dependence, a utility. It made music. Musical sounds that appear with a new technology (2022, May 5)

In this field note extract, musical sounds tend to become scarce as digital system replace analog ones (Kubisch 2020). This because digital sounds usually have higher frequencies and have a different timber while analogue ones tend to be more musical and rhythmic (ibid). Back to the extract, with Kubisch's narration participants travel back in time, and are now faced with today's technology to which we give electricity, and time. Accounting and celebrating the present still comes with looking back to the past, to the sounds and what constituted them that are no longer present. Accounting of those past and present sounds invokes the interconnectedness of naturecultures. New technologies have corresponded to the shift from analog to digital systems that treat data and emit different types of signals. Digital ones also came at a time where the expansion of communication devices resulted in more electrical devices also changing the dynamic of cities (Kubisch 2022).

3.3 Hearing and listening: Sensorial happenings as new ways to know and remember electricity

Electrical Walks provide a sensory inquiry – a soundwalk that affords investigation into non-visual senses (Springgay and Truman 2018) which can offer new ways to see. Writing on the sense of hearing in the hospice, Gunaratnam cites molecular biologist Ching Kung (2005), who found that hearing and touch seem to come down to "a single physical parameter – force" (cited in Gunaratnam 2015, 82). As Gunaratnam puts it 'to hear is to be touched and to receive' (2015, 82). Hearing electrical waves similarly means to "take in and to resonate with the ambient and sublime presence of" the world of electricity around us (ibid). The headphones offer participants the choice to hear the sounds as they can also turn them off or remove them from their head. Thus said, once activated participants engage with composing music from the "emissions" of electromagnetic waves as the sounds we hear are changing according to the bodily movements. When choosing to engage with the sounds, participants activate the headphones, and the force of sound result in the filling not only of the ear but of the whole body (Gunaratnam 2015). *Electrical Walks* last from 60 to 90 minutes and are an exhausting experience. For one, because the unattuned ears are

overwhelmed by the unusual sounds, rhythms, and because through hearing, the ears that can be compared to a mouth "ingest and swallow sound through an aural alimentary canal that travels from the ear and head, through the neck and throat, down into the labyrinthine gut where the distillation of an outside pushes at us from our insides" (Gunaratnam 2015, 83). While overwhelming, this newfound awareness and proximity between participants and (in)audible electricity shifts the dynamic of the relationship towards an understanding that "Otherness is an entangled relation of difference" (Barad 2011, 150 cited in Springgay and Truman 2018). Different participants may experience the sounds differently, but for me, a fan of electronic music, discovering the (un)heard magnetic world filled with rhythms, tempo made my body vibrate. Anna mentions a certain excitement related to getting to know this (un)known world. She says that from feeling ridiculous with the headphones at the beginning she then experiences a kind of "superiority" from having the chance to enter the intimate world of electricity (interview 2023). This intimate experience gives you an insight in the "sensorial subtlety" of electricity that usually "hold[s] us fast within the grid without our knowing" (Anusas and Ingold 2015, 546). While remaining visible, the headphones enable participants to become aware of electrical happenings that are not inherent qualities of electricity, but in fact it is our bodies that are limited to its emanations, not electricity. Without the headphones, electricity is therefore impervious to *our* senses which rebalances electricity as possessing characteristics we might underestimates and encourages a decentring from human hegemony.

In contrast, during the electric walk, participants are enabled to hear electrical waves that emanate from electrical devices, cables, wireless system and more, electricity becomes sensible. This newly accessible sensory world defies one of electricity's characteristics that make it so hard to "think with" (Bakke 2019) and so easily forgotten (Ortar 2019). It allows participants to reflect on their own understanding of electricity and be surprised by what they do not know (Keller 1983) because listening to the unheard makes visible the limits of what we know (Hartman 2008). As art historian and fellow participant in the walk Anna Kodl mentioned during our interview, referring to visual sense: "it makes what is invisible visible through our ears" (Interview 2023). Anna compared the headphones to a microscope. Similar to the way a microscope would enhance her vision by enabling her to see things her organic eyes cannot, the headphones allow her to hear the unheard things that usually go unnoticed. Instead of looking for 'beautiful' things during the walk, Anna is trying to train her vision to spot electrical devices that would make interesting sounds. It is therefore changing the way

she is using her sight. According to molecular biologist Barbara McClintock her use of scientific methods differentiated her from her colleagues through the time she invested looking at the maize plants and being patient to "hear what the material has to say to [her], the openness to let it come to [her] and to have a feeling for the organism" (Keller 1983, 198). Even though electric current is not an organism it can feel like "the heartbeat of the city" (Kubisch 2022) and participates in life and mattering.

To become sensitive and to listen to its waves offer participants "intimate knowledge [that] can 'extend [their] vision" (Keller 1983) and understanding of electricity and its infrastructures such as cables, electrical devices, transformers stations, etc. Whilst the participant of *Electrical Walks* is not studying electricity, they still get to feel electricity in a usually inaccessible way makes one feel closer to something usually unperceivable.

When electric art enables participants to hear electromagnetic fields thus, to see through our ears what is invisible to the eye, it can render us accountable to how we conceived electricity into wires away from sight (Anusas & Ingold 2015). As participants are becoming comfortable with the headset, they begin noticing the unnoticed. Participants, who are also electricity consumers, are enabled to perceive what beyond the usual surface of plugging our devices into the socket for it to function (Anusas & Ingold 2015).

Noticing then turns into listening that Campt described in relation of unremarkable as "listening to the lower frequencies of images register as what I describe as 'felt sound' – sound that, like a hum, resonates in and as vibration" (2017, 7). The practice of listening invokes another level of focus and attendance to the hums, vibrations, and frequency of magnetic fields. It relies on listening to seemingly silent object and this non-visual method and description that offers new possibilities.

3.4 Touched by sound: emotions and affect

As *Electrical Walks* contribute to reinstating electricity's agential capacity, participants may recognize in electricity not a "thing" but a "a gathering of forces, energies, and materials" (ibid). Suddenly, electricity is not "turn[ing] its back to us" (ibid). It is maybe us, who turn our back to electricity by trying to objectify it (Bakke 2016; 2019). As I was surprised to discover that the electromagnetic waves always surround us, and I was also chocked by my own ignorance of electricity's properties. I also became more aware of my dependence of electrical devices and how it had impacted the evolution of cities. My body was affected by the vibrations, humming, or thudding involved by the sensorial

manifestation experienced in the walk because I was touched by the beauty of the (un)known. As I was walking, I was also reflecting and processing the experience. Walking made me register the sounds and associate them with locations which impacted the way I remembered the sounds by associating them to places I know (Neumark 2016). As electricity's forces becomes "visible" through hearing, something else is picked up by the body and destabilizes our relationship to electricity. The musical sound produced are moving as I move and exciting as well as being unsettling. First, electromagnetic waves are heard and move the affected body to investigate and to reflect on our ignorance – what we do not know and what we cannot feel without technology – the headphones' help. I think that at the beginning of the walk, I was hearing the sounds, but as I became attuned the walking allowed me to pay attention to the variations of the sounds and listen. Drawing from Bennett (2001), I interpret the electromagnetic waves as "voices" of electricity which humans become sensitive to, listen to, and thus "hear or enhance our receptivity to "propositions" not expressed in words" (cited in Neumark 2016, 389).

The headphones are worn individually, but the experience remains collective because participants are looking at one another to reorient and find new sounds. The headphones limit talking but communication occurs as people exchange gaze, smile, surprised looks, and directions. Furthermore, the body is affected and emotionally triggered. Laughter, gasps, round eyes, pointing at interesting sounds, mimicking one another to hear a different frequency, moving the head to the tempo that reminds me of electronic music. Those affects and communications experienced remind participants that we live in a sea of electricity (Bakke 2016), and one becomes aware of the interconnectedness of everyone who now hears what usually is inaudible what is now accessible, and how deeply dependant of electricity, we, the participants, are.

Isolated in our separate sensory bubble, but collectively engaged, the experience is unsettling in different instance. *Electric Walk* is partly fearful and uncomfortable but not in the sense of electrocution danger requiring its isolation and careful handling (Anusas and Ingold 2015). *Electrical Walk* makes the body vulnerable by depriving it of its hearing to walk, the loud noise that can damage the ear, and the discovery of electricity's indeterminacy. At the beginning of the walk, mentioned in the map's instruction and reminded by Kubisch in certain location, the loud frequency can be damaging for the ear. As I do not know what to expect, and there is little adjustment possible on the headphones except position one and two that influence the volume, it is intimidating to come out of the gallery

with the big red headphones (Appendix C, picture 2) not knowing how loud it will be. I noticed that people, like me, were agitated. What I later associated to the emotion of discomfort was enacted:

> When I noticed people playing with the headphones, grinning at places, the sounds were usually more high pitch. Crossing the streets and seeing people looking left and right multiple times while holding on to their headphones instructed me that their bodies was unacquainted to the loud noises. Some people would be walking ahead of me. As one would jump, I would come closer with a slower pace, my head moving backwards as I am moving forward. When crossing, my shoulders were clenched up to my ears. My eyebrows were frown. Electrical waves were moving through our bodies as the affects were. (2022, May 5)

This extract retelling field notes from the first five minutes of the walk presents bodies discomfort. The headphones are blocking the ears to danger as well as making us feel ridiculous for not following the normative way to walk, uneasiness occurs. By clenching the shoulders, the body is shrinking which is a bodily symptom of fear (Ahmed 2014). Sacco and Glackman describe vulnerability in terms of 'feelings of susceptibility and openness to attack that influence the processes by which definitions of criminal danger are constructed and regarded as salient bases for action' (Sacco and Glackman 2000, 412 cited in Ahmed 2014). This definition demonstrates how vulnerability involves a particular kind of bodily relation to the world, in which openness, doubled through hearing (Gunaratnam 2017), is associated to danger. As Ahmed writes it "fear involves reading such openings as dangerous; the openness of the body to the world involves a sense of danger, which is anticipated as a future pain or injury. In fear, the world presses against the body; the body shrinks back from the world in the desire to avoid the object of fear" (Ahmed 2014, 68-9). I think the fear comes from the politics of mobility which works as "secu[ring] the collective: "the individual subject comes into being through its very alignment with the collective" (Ahmed 2014, 70). In these circumstances, where fear is related to discomfort and the body has the social setting to get acquainted with, fear provides a site for making the body sensitive to the experience.

Furthermore, the following discomfort relates to the discovery of the first layer of electricity's agential capacity. Indeed, opened to the new electrical world which the participants knew nothing of its existence comes the question: What does it do? Are there living entities/animals that can feel electromagnetic waves present in cities? Is it detrimental to the body? Kubisch says those questions always arise at the end of the walk. She thinks

they are essential because it represents the discovery that "what you see is not a very secure thing. I mean, you may look at something—and the sound is so different. You look at a park, and you hear a heavy beat. Listening, you now know there is something maybe under the earth. […] I think the *Electrical Walks* make you feel a little bit unsafe. They take you out of your normal perception." (2020). As well as exposing what is not known which is discussed in the next section, the walks defy usual perception of safety by revealing the 'security' technology's omnipresence in the city. Indeed, "businessmen, property owners, and police also found that electricity was useful for social control" (Nye 1996, 145), which is underlined by the politics of Kubisch.

> Once the group and I got onto Parize street, we were deep enough into the old town that we could get rid of the strong sounds emitted by tram lines. Something else hits me: the security system. Loud noises similar to hard techno. Kubisch tells us to be careful never to enter a shop with the headphones on because the security gates could damage our ears. More than halfway through the walk, I start feeling tired and overwhelmed by the uniquely designed security system of the Parize street. Cameras and alarm system intimidating are coupled one or two guards dressed in Black with a device on their ear. They look like secret agent. Kubisch notes that seeing all these men security guards displays the idea that women could not protect these shops. I think to myself that if everyone would be wearing our device, people would not risk stealing because the sounds are intimidating (2022, May 5).

Parize Street is disruptive, but it marks the imaginary. The sounds are exhausting, they enter the body and tire you. By walking to the voices of electromagnetic waves, the participants, equipped with the mapping out of the city which increases the impact on their memory, enables the body to become, informed by Spinozist proposition as a site that can affect and be affected, thus enabling changes and transformations (Neumark 2016).

Another interpretation of the strong capacity to move the body the experience of *Electrical Walks* have can recall the notion of "touched" by sound. It resonates with Campt (2017) notion of "felt-sound" that are low frequencies that are indeed more than heard, as they are felt by the body. Wearing the headphones that have the ability to transmit frequencies registered from electromagnetic fields to the body become sounds but register as frequencies and vibrations. Like Campt described in her practice of listening to images, these "felt" vibrations penetrate the body and the sensations that results are those that shake the listener toward (re)thinking practices. As the body registers the vibrations emitted by ATMs, security system, light, phones, tram lines, the underground, the body is feeling electricity as a "force" that moves the body and that is not restricted by our electrical

infrastructures that project the idea of restricting electricity in wires (Anusas and Ingold 2015). In this sense, participants register the experience as entering the world of electricity and being "touched" by it. This sensation of touch surpasses the idea that electricity "speaks" as I discussed before because there is something both intrusive and beautiful as the body vibrates from the inside. I remember feeling that it was quite addictive in a certain way. You want more, I tried to rent the headphones for my trip to Serbia the week after the walk, but the Kunsthalle would only allow to rent the headphones during its opening hours. I felt these vibrations and I wanted to explore more and understand more about their workings and their songs. I would surprise myself moving my body through the rhythms of the frequency although I had not completely registered that it could be referred to as music. I think this intimate experience with the magnetic world of electricity is what provokes change in our reflection to electricity.

3.5 Growing responsible and response-able

In this section, I present how *Electrical Walks* is a setting in which electricity can "undo the very division between real and counterfeit worlds […], restor[e] an enhanced awareness of the flows of materials and energy in which all practice necessarily subsists (Anusas and Ingold 2015, 546). Electricity's agential capacity emanates from the entanglement of participants, artists, work of art, music-sound, waves; The composing of music through *Electrical Walks*, which is the work of the artists that she shares with participants as offering them the chance to (be)come artists themselves by instrumentalizing them cannot happen with the work of work of art – which is the waves/sounds. This composition brings together response-ability and responsibility in (re)thinking our approach to electricity.

First, I go back to the questions often discussed at the end of the walk related to the potentially harmful effect of electromagnetic waves. Potential sensibilities towards electric fields have not been proven and for now it is not possible to determine whether this will be possible to know eventually. This yet unknown is indeterminate as we cannot know about and cannot know when and if it will ever be known (Schrader 2010). Indeterminacies destabilize human centered world which is why it disrupts participants. While enabled by human technologies, electromagnetic waves are more than technological devices and are as much part of life as humans are.

Furthermore, humans do not have the hearing capacity to hear the magnetic world. Becoming aware of its existence, I believe humans are humbled in their limitations and

connectivity to natureculture. Reliant on a technological device to hear the (in)audible, humans are provided with an illusion of enhanced hearing capacity. Moreover, the headset, coupled with the work of electromagnetic waves allows the participant to become an instrument. This can be read as a certain (temporarily) becoming cyborg (Haraway 1991). Understanding that the cyborg is a cybernetic organism, hybrid of machine and living, social realist creature and character from a book, its dual identity, the cyborg lives in natureculture. *Electrical Walk* offers the cyborg experience of offering participants higher range of frequency capacity to hear and becoming of technological musical instrument. Through Electrical Walks, the participants who become composers also become partly machine combining science, technology, art and new ontology and epistemology. Who belongs to nature then? Divisions are blurred. The environment it creates enable becoming responsible and response-able.

Schrader works with the concept of response-ability through her work with the Dino's and its capacity to respond and create the conditions for the fish-killers to detain options within time and space (2010). The headphones create the conditions for participants to compose and hear and for electricity to be heard (by humans). The headphones offer the environmental conditions through providing space and time for humans to listen to electrical devices and learn about their capacity to respond (Schrader 2010). The headphones are a tool contributing to the relation of humans and more-than-humans. It creates the environment in which electrical devices' voices can be heard and accounted for. From learning about electromagnetic induction's existence and the beauty of their sounds, electrical devices contribute to their own identity as electric machines within which they contribute at defining their own nature (ibid). The aim is not to define specifically what electricity is, but to get to know partly what they are outside of human's experience and knowledge. This has a dual effect of enabling electricity's responses and for participants to become accountable for what they do not know, and what they get to know. The way Kubisch attends to each sound in its unique existence and particularity informs of her responsibility. In this field note, I describe the way Kubisch attends the particularities of what the sounds she hears are significant:

> ATMs are highly musical for instance. She caught our attention to a specific sound emitted by one type of ATM. This watery rhythm can be found all over the world. They are "globalized sounds". It is the same system everywhere which is rare. In Moscow there used to be an ATM machine in every house, but they are still very

common. In Prague, there are not many ATMs compared to Brno. In Berlin, some are equipped with rare/unusual system which she qualified as 'weird' (2022, May 5).

The unique feature of certain system compared to others speaks. Kubisch informs the group that the electrical devices technology gives information on how money is spent around the world. This information is spoken to us by electromagnetic waves. Sometimes, even Kubisch who knows the specificities differentiating the technologies from one another through the rhythms, the tones, and the beat and to her surprise and satisfaction, she cannot find the source of a wave. Kubisch brings the group in a corner of a small street in the old town where she tells the group about the "unknown Signal" (2022 May 5). The signal is which located at the corner of Seminářská street, Kubisch describes it as a strange sequence of rhythmic signals" (ibid). This "unknown signal" that remains a mystery for her because she cannot tell if it comes from a specific electronic device in an apartment or is a communication device. It seems Kubisch feeds her enthusiasm for the magnetic world for these mysteries as she compares to those areas that bore her such as Karlova street where "electromagnetic sounds are as boring as the souvenirs in the shops" (2022 May 5). Electricity is responsible for the sounds and is always more complex than understood, but getting to know it more intimately creates an environment of accountability within the apparatus of the knowledge production. As discussed in the previous section, in *Electrical Walk,* the headphones offer an environment of surprise within the apparatus of knowledge production (Schrader 2010). Some sounds speak more, some she prefers, other bore her. Her relation to the electric world makes participant attentive, sensitive, and growing responsible for electricity.

Without electricity, there would not be any sounds, any electromagnetic waves, no possible induction. Allowing participants to compose is teaching them to become responsible. Participants composed as they walk, get lower, stop, move faster, turn. Their movements coupled with their listening practice moves within their affected body and create a melody. Seth Ayyaz (2021), sound artist, argues that "organising the conditions such that sounds are revealed, bracketing in their ramified fields of associations and consequences, freed to roam in space and form, extending their activity on their own nonhuman terms". Those nonhuman "terms" refers to the conditions imposed by the magnetic world.

When Despret asks "do birds make art? (2016, 117), I ask do electromagnetic waves make art/music? To find her answer, Despret studies the work of Alfred Gell, art

anthropologist and Sourieu. Gell used agency and intentionality interchangeably and studying Indigenous knowledge, he recognizes that the work as in work of art imposes itself on the artist, in my case electricity as electromagnetic waves, imposed themselves on Kubisch and on participants, thus making the work the agent (Gell 1989 cited in Despret 2016) Then, continuing to explore the question related to animal as artists, Despret turns to Souriau she writes: "to say that the work of art is insaturated, then, is neither to attribute causality somewhere else nor to deny it" (120). This implies that the artist is "not the cause of the work and that the work alone is not its own cause; the artist carries responsibility, the responsibility of one who hosts, who collects, who prepares, who explores the form of the work. In other words, the artist is responsible in the sense that he must learn to respond to the work, and to respond to his accomplishment or his failure to accomplish such work" (121). As the work of art is dependent of all agents, and that electricity is capable to respond, what is left is for responsibility to enact from all parts to recognize what electricity is providing to the work of art, and more largely to life.

3.6 Conclusion

I experienced the walk as listening to humans and more-than-humans' relations because walking with the headphones made audible the interacting agency existing within humans and electricity as they jointly composed rhythmic beats in their interactions. This chapter examined Kubisch feminist methodology as creating a sound walk that challenges the separation of the natural and the digital analog by attributing electricity its agency. Its agency is enacted from the combination of walking, hearing, and listening enabled participants to question what they do not know about electricity and what bodies cannot do. The questioning occurs along with the body being affected as multiple sensations pass through the body. Finally, as participants get more sensitive to the sounds, they grow attached, and become more inclined to listen to what electric devices might say. In this way, the walk can be interpreted as offering the conditions for response-ability and responsibility. Participants may become more aware of the presence of electricity in their life and what it provides their life with.

Walking in the city with the headphones alters your perception of the city and enhances your consciousness of electricity's presence in our everyday life. I became aware of electricity's omnipresence in my life, and my dependence to it. Industrialized cities are marked by a dependency to electricity filled with misconceptions. By becoming vulnerable and sensible to electricity, participants can feel and become aware of electricity's presence,

be affected, and becoming response-able and responsible for electricity challenging our relationship to it.

4 Chapter 4: Challenging Relationships: Care and Responsibility in Christine Beaulieu's *J'aime Hydro*

4.1 Introduction

Drawing on feminist science and technology studies and feminist epistemologies, this chapter addresses the question: how can works of electric art challenge the relationship of ordinary people to electricity? Examining the complexity of electricity and the energy system through Quebecers' relationship with Hydro-Québec – the province's energy supplier, the documentary's play analysis pays particular attention to the research methodology that informs Beaulieu's podcast which contributes to the production of situated knowledge in which she suggests possible steps for Quebec's energy future. The analysis shows that Beaulieu's journey to selflove occurs along learning to love Hydro-Québec, electricity, and the more than-human world entangled with it. These elements are analyzed trough the examination of the text. I argue that her methodology and writing create a comfortable and accessible learning environment for participants to get to know Québec's electricity system in its complexity and foster care and responsibility in their relationship with electricity and its energy system, which is examined from participants of the live play and listeners of the podcast interviewed for this project.

The analysis examines the text of the documentary play which is also a methodology and research. It involves interviews and meetings with sociologists, scientists, environmental activists, union representatives, members of Hydro-Québec management, citizens of regions affected by the construction of dams, members of Aboriginal communities, political representatives including the Premier of Québec, François Legault, the analysis of government and scientific reports on energy and the environment, public consultations held by the government of Québec's Energy Regulator department on the energy sector, field research on the site of construction of La Romaine – the latest dam worksite in Quebec as well as a visit of one of Québec's biggest dams. To write the play, Beaulieu reflects on her observations, field notes and transcription of the interviews. From one interview to the other, she performs peer review by verifying her material with experts she meets along the way. Gaining credibility, the experts, and representatives of Hydro-Québec that she meets recognize her understanding of energy and electricity issues leading her to ask more complex questions and tie up her findings. As well as analyzing her methodology of research, I examine the narratives, and her character as an evolving researcher. To examine the impact

the play has on listeners and participants other than myself, I analyze four interviews. The research began in 2014, the latest version of the play was performed in 2022, the podcast dates from 2019 and contains the same information as the play. The simple staging of the play directed by Philippe Cyr paired with minimal visual aids was conceived to make it easily adaptable for the podcast format (Guay 2018). Making a podcast of the play was the plan from the beginning to make it accessible to a larger audience which is why the play and podcast are organized on five episodes. The transcription of the text has also been adapted as a book. My analysis of the text is based on the podcast, as I have not participated in the play, and will mention the live play through the interviews and the examination of its format. Every live performance was recorded and shared live on an online platform.

In the first section, I contextualize Hydro-Québec, the question of national identity and the overall functioning of the energy system. Second, I contextualise Beaulieu's methodology within feminist epistemologies. I analyse Beaulieu's positionality, her methods, and her transformation as a researcher during the research process. I pay attention to her subjectivity in her role of actress, writer, and researcher as she displays her emotions, and makes herself vulnerable, thereby inviting listeners to reflect on their position towards the energy system and electricity. It analyzes the text and her narration to examine how her conception of electricity focuses on the energy system – hydroelectricity that allows the generation of electricity. The third section examines how learning to love herself involves learning to love others, accept interdependence and shifts towards an understanding of the world's entanglements that allow agency to the more-than-human world. The documentary play *J'aime Hydro* serves as a thought-provoking opportunity to examine the audience's relationship with electricity, the energy system, and Hydro-Québec. Please note that for simplification purposes, when referring to both participants (play) and listeners (podcast), I will use the term audience because although an audience refers to the public in the theater, the word audience reference audio – and I think that it is an important part of the process as it fills the audience with Beaulieu's emotional journey. Throughout the sections, the chapter explores the play's underlying themes of care and responsibility, analyzing how Beaulieu's research process aligns with Science and Technology Studies and feminist epistemologies.

4.2 Setting the play in its context

It is worth revisiting the history of Hydro-Québec within French speaking Quebecers' national identity along with a basic understanding of Hydro-Québec's management. The origins of the provincial utility trace back to the 1940s, during the Quiet Revolution, a time of important economic and social reforms, that Hydro-Quebec's position as a central component of the nationalist agenda for the province was solidified. Nationalist agenda represents the movement led by independentists to separate Quebec from the rest of Canada which would benefit French speaking Quebecers. In a significant video clip presented by Beaulieu in the play, dating back to the early 1960s, René Lévesque, leader of the nationalist movement and Minister of Natural Resources at the time, passionately advocates for the expansion of a public utility that would grant all Quebec residents the status of "masters in [their] own house" in every region of the province (Green 2018). In the history of Quebec's dual colonization history by the French and later by the British, it was one of the first economic powers held by French-speakers over economically dominant English-speaking forces since the British took over the French (Campbell Strategies 2021). As René Lévesque puts it; it meant Quebeckers would be owner of their own electricity as hydroelectricity was the only source of energy from Quebec – other sources needed to be imported. The complex colonial history of Quebec erases discussions over settler colonialism although very much palpable from this short historical capsule. The year 1964 was marked by the nationalisation of Hydro-Québec. The organization of Hydro-Québec is divided in four: Hydro-Québec Transport – the grid and Hydro-Québec distribution – bills, client services and 'smart meters' are ruled by the government's Energy Regulator department. The final two: Hydro-Québec construction – gives contracts to build new dams and Hydro-Québec production – electricity producer, supplier and exporter are managed like a private company. The last two are compared to a black box which Beaulieu focuses on for the podcast aiming to unbox them to the citizens (2019). Today, Hydro-Québec operates over 60 hydroelectric generating stations and manages an extensive network of transmission lines and substations (Hydro-Québec website). For its abundance, the price of electricity is one of the lowest in North America. However, as a public corporation, any increase in the price of electricity is seen as another way to increase taxes. For this reason, and its symbolic importance within the national identity, Hydro-Québec is meaningful and subject to scrutiny by the population making it an interesting element of analysis that informs greatly on cultural, social, and political elements that needs further consideration in the province. Hydro-Québec as part of the national identity of French speakers has erased necessary conversations over settler

colonialism, and capitalist approach to resources in which water is considered as a resource available for our electrical needs instead of Quebecers responsibly attending to the water present on the land.

4.3 Addressing social ignorance

During the first episode, titled "Raw Materials" the audience learns about Beaulieu's entry into the field of electricity and the energy system. Between 2011 and 2014, Beaulieu has multiple encounters with environmental activists questioning the latest power plant construction by Hydro-Québec on La Romaine. La Romaine is a large river on the North Coast. The name derives from the Innu word olomane or oromane, meaning red ochre, which alludes to the reddish color of spring runoff and was given by Innu communities living at the river's mouth (Michon 2018). Activists and Indigenous people protest its construction based on concerns for the health of the river and the soil as well as larger impacts on the environment. When hearing about these issues, Beaulieu is too absorbed by her life to consult the documentary film that contributed to the politicization of river's health to a larger public titled *Chercher le Courant*. Her blissful ignorance takes a turn in November 2014, when Annabel Soutar, artistic director, and founder of Porte Parole (spokesperson in French) producing documentary theatre that addresses pressing social issues with a sense of urgency, offers Beaulieu a contract to write a documentary play on Hydro-Québec. Unsure if she feels concerned enough by the issues of energy and electricity other than from paying her electricity bills, Beaulieu's curiosity gets the best of her. Soutar has raised concerns over Hydro-Québec's transparency in refusing to participate in a project addressing the health of rivers. Hydro-Québec representatives justify their refusal to public events on rivers' health because the discourse has become "too politicized" since the distribution of the film *Chercher le Courant.* Beaulieu accepts to think about Soutar's proposition to lead a citizen investigation on Hydro-Quebec. That night, she watches *Chercher le Courant*. The documentary film reveals the last canoe excursion possible from the source of the river to its mouth before becoming a worksite where four dams will be built (Boisclair and de Gheldere 2010). The film presents alternative renewable energy sources production and the cost of production of one Kilowatt hour versus its price on the market to argue against the rentability of harnessing La Romaine. For instance, experts in the movie claim that Quebec's solar potential is high and would be more profitable. The film gathers samples of water and soil to evaluate the consequences of flooding and tree cutting necessary for the power-plants construction (ibid). Beaulieu cannot believe what she has just learned from the movie. She

wants to verify the rentability of the project because she thinks Hydro-Québec has justifiable reasons to destroy the ecosystem of a river (2019). She then consults the Report Lanoue-Mousseau published in 2014 mandated by then Minister of natural resources, Martine Ouellet. The report executed by Robert Lanoue, physicist, and Normand Mousseau, Energy expert, titled *To Master our Future Energy For profit, Economic, environmental and social for all* (2014, my translation), recommends to stop the project on La Romaine because it is not profitable as it costs more to produce one Kilowatt hour from hydroelectricity than its price on the market that has decreased from gas produced electricity in the United States. The report states that Québec's biggest energy challenge is not to secure supply of energy but to address energy surpluses' waste. For ten years now, electricity demand has roofed, and there remains an important surplus of electricity produced that cannot be stored. Thus, the focus should be on energy efficiency rather than producing more electricity (Lanoue and Mousseau 2014; Beaulieu 2019). Hydro-Québec's apparent lack of transparency and inconsistencies in the ongoing construction project launched by Hydro-Québec going against government experts' have convinced Beaulieu of the urgency to tackle the energy issues of Quebec and make energy and electricity more accessible to its population in order to pressure the government and Hydro-Québec towards transparency in the energy issues. Deciding to become responsible for the citizen inquiry presented by Soutar, Beaulieu's research to addresses the question "what has become the relationship between Hydro-Québec and Quebeckers"? The aim is not only to critique Hydro-Québec but to explore the negative impacts of hydropower plants, the arguments in favor and against building more hydropower plants in terms of rentability and environmental impact and, impacts on communities.

Informed by Roy Dupuis, one of the founders of the Foundation River that protested the project of La Romaine and who also worked on the film *Chercher le Courant,* that the issue with electricity is that its infrastructures and its workings are so complex, gatekept (Ortar 2019) and political, there is never enough time to address it (Beaulieu 2019). Beaulieu is addressing the misconceptions of electricity and the energy system through the study of Hydro-Québec's inconsistencies.

4.3 Positioning oneself

In this episode, Beaulieu also lays out her positionality by situating herself and her team within the research as performing feminist objective knowledge (Haraway 1988). During the play, she takes along the audience from her blissful ignorance, gaining consciousness of the urgency, her guilt in missing opportunities to become responsible sooner, her difficult decision to take on the project and becoming a researcher without any experience. By presenting her methodology and her reflection on what she is learning, Beaulieu is producing partial knowledge that demands reflection from every member of the audience from their own position.

The opening of the first episode answers why she took on the project and informs about her positionality:

> "Because I am Quebecer. Because I believe human nature is intrinsically good. Because I think we need dialogue especially when we have opposing ideas. Because I start from zero knowledge in the field which makes my credibility questionable as an information agent on energy. Because I am worried for the future. Because my 'I love' is sincere. (Beaulieu 2019, my translation).

This excerpt establishes the importance Beaulieu grants to be open about her social location. This act of transparency and self-disclosure of her questionable credibility as an informant on energy highlights how she finds it important to state that, like her audience, she is starting this project of understanding the workings of energy and electricity. It marks a distancing of Beaulieu's methods and Hydro-Québec's lack of transparency that resulted in Beaulieu's decision to investigate on the public utility (Beaulieu 2019). Drawing on situated knowledge (Haraway 1988) within feminist epistemologies, Beaulieu's acknowledgement of her positionality enhances the credibility and reliability of the research as it makes potentially her accountable to produce situated knowledge (ibid). By addressing her positionality, she invites her audience to reflect on their own social locations as they may recognize themselves, or on the contrary feel different than Beaulieu. By trying to identify to the character, participants are more inclined to know where the play is going, because they feel as if they begin on the same page as Beaulieu. My interviews with Patrick, Vincent, Émile and Annie, all pointed to their acknowledgement that they felt validated in their own ignorance. It sets the beginning of the play as potentially promoting a deeper understanding

of their relationship with electricity and Hydro-Québec as the declaration of who she is as a person evokes an invitation to engage in the topic of energy in honesty and transparency.

She is immediately informing the audience that she did not have expert understanding on energy and electricity which boosts her credibility within the topics of Hydro-Québec, energy, and electricity. In my own research on electricity, I felt understood in my initial shame of not knowing the basics of electricity. Instead of feeling judged for my ignorance, I felt validated by Beaulieu's transparency in not knowing. When Beaulieu informs the audience about her limited knowledge on energy and electricity as she begins it impacts "what is known, and what can be known" (Code 1991 in Hird 2012, 458) because it is embedded in responsible approach to the research in which the audience feels like the inconsistencies of Hydro-Québec will be accordingly investigated. As well as revealing who she is, Beaulieu informs participants about where she stands as researcher, not just an actress, on the topic of hydropower, in particular her hesitation about becoming responsible for this project, and how, like many of them, she has intentionally ignored issues related to Hydro-Québec (Beaulieu 2019).

Finally recognizing "ignorance is not bliss" (ibid). It encourages participants to question the production of deliberate ignorance. Her emotional process between episode one and two touched me. She feels guilty that it took so long until she felt responsible for the energy sector. While listening, I felt ashamed because I shared her ignorance. The podcast offers space and time for the listener to reflect on its position. I was reflecting on myself while following Beaulieu's reflection. For instance, as she becomes responsible for her topic, she is overwhelmed by the complexity of the topic, and I could recognize myself through her. Even for participants who have witnessed the play, the podcast remains available and offers a platform that Beaulieu can edit as she added developments on energy-decision made by the government of Hydro-Québec. Patrick, social worker student I interviewed, notes that looking at Beaulieu's evolution from ignorance to almost expert made him confident that everyone could and should understand more about the issues of electricity and energy. Before the play, he felt overwhelmed by the topic of electricity and believed it was a subject meant to be gate-kept. Throughout the play, Patrick came to the realization that it was not only essential to understand electrical systems and infrastructures better, but that becoming more informed also had political impacts because energy policy should be an element to consider when voting (Interview 2023). As Pink (2019) noted, electricity has an impact on politics.

Furthermore, the researcher embodies her subject position. Soutar insists that Beaulieu's transparency about her initial absence of knowledge on electricity or energy is essential because "neutrality does not make an inquiry rigorous, but the researcher's passion for its subject of inquiry does" (Beaulieu 2019). Embracing subjectivity, Beaulieu's limited location and situated knowledge allows the play to be accountable for what the participants learns and situates the research as respecting feminist embodied objectivity (Haraway 1991). Moreover, Soutar laying out/reflecting on their respective positionalities indicates an aspect of situated knowledge (Haraway 1988). Soutar claims that Beaulieu is in a better position to tackle the issue than her. As a French speaker raised by proud Quebeckers who supported independence, Beaulieu can explore Quebecer's relationship to Hydro-Québec more than an English speaker like Soutar, because Hydro-Québec is part of French-speakers national identity (Beaulieu 2019). Stressing the partiality of her perspective she accounts for her position as a white, who grew up in a sovereigntist household (Québec separationist group), labeled leftists, associated with opposing representatives of Hydro-Québec such as Roy Dupuis. (Beaulieu 2019). These characteristics of Beaulieu's social location define her partial knowing self (Haraway 1991) who will not attempt to perform the "god trick" but will instead use her positionality as a non-expert to gather information and reflect on it. When Beaulieu addresses her doubts concerning her ability and desire to take on the project to Soutar, the participants get to know Beaulieu and her teams' social location (Hird 2012; Haraway 1988). The question of biases and positionality appear again in the final episode. The dynamics have shifted. Now, Annabel Soutar, the executive producer and the play's director, Philippe Cyr, challenge Beaulieu's biases as Beaulieu contemplates the idea of collaborating with Hydro-Québec on an advertising campaign for an electric car (Beaulieu 2019). Beaulieu is aware of her biases such as the fact as she is intimately connected to Hydro-Québec, her research topic (Keller 1983) but it does not stop her from being objective in challenging the representative of Hydro-Québec because she understands that Hydro-Québec's decision-making is in a capitalist philosophy that need to become responsible for its consequences. She agrees to the collaboration with Hydro-Québec and becomes the first person to drive up to La Romaine with an electric car which represents an advertisement for Hydro-Québec and explain Soutar and Cyr's reluctance (ibid). At this point in her research, Beaulieu has analyzed the different pros and cons of hydroelectric dam projects and she believes for now that Hydro-Québec should diversify its development strategies as the negative impacts of dams on the environment and communities are more important than fostering an expertise in hydroelectricity that has justified the sacrifice of too many rivers.

Beaulieu knows that it is time for Hydro-Québec and its population to grieve hydroelectric dams' project. Therefore, she is biased but knows it does not impact her approach. An insecure Beaulieu has shifted and now performs objectivity in her research that is not reduced to her biases but dependant on her production of situated knowledge (Haraway 1988). To produce such knowledge, she needs to situate herself continuously alongside her research – which is presented in the play as she explains in detail that she agreed to do the marketing for Hydro-Québec because she believes in pushing forward electric cars, but she will not let her collaboration with Hydro-Québec stop her from questioning their practices.

4.4 Learning to love Hydro with good science

Opening with the word 'love' and 'sincerity' further implies Beaulieu's deep emotional connection with the energy system (Beaulieu 2019). It also makes Beaulieu accountable for her research (Haraway 1991; Hird 2012). Her methods align with Keller's principle that "good science cannot proceed without a deep emotional investment on the part of the scientist" (1983, 198). Just as biologist Barbara McClintock's way of knowing through gaining a feeling for the organism and taking the time to let the material speak to her (Keller 1983) was unconventional for natural scientists but still valid. I consider Beaulieu's approach to electricity and the energy sector as unconventional; she is an actress, tasked to write her first play as documentary theater on the electric system of Quebec, therefore self-taught and continuously learning through her interviews, and her field observations and her studying energy reports. Presenting the pros and cons of dams' building required a profound understanding of electricity's nature and generation, the grid, the energy production and transformation from hydroelectric dams, its history in Quebec, and its impacts on people, the economy, the territory, and the ecosystem.

In the second episode, Beaulieu does not know where to begin her research. She realizes she does not even know what electricity is. She turns to a textbook definition of electricity. As she teaches herself, she teaches/reminds the audience on the basic of electricity. She is surprised by the infrastructures necessary to produce the movements of electrons that is electricity (2019). As she begins learning on electricity, Beaulieu attends a public consultation on electricity and aims at discussing with "energy expert" to challenge her "artistic" mind (Beaulieu 2019). From this strategy, Beaulieu combines her personal learning process with expert knowledge which allows her to slowly become a semi-expert herself. Through the text of the play, she brings along the audience. During a public consultation of the Energy Regulator department where 90% of the crowd are men in costard,

making Beaulieu feel out of place, she meets Jean-Pierre Finet, Analyst in energy economic regulation for the Group of environmental organizations in energy (ROÉE) who teaches her about what is a kilowatt hour – the energy that we consume versus power – the powerplant's capacity to produce (2019). Some encounters lead Beaulieu towards the next step or a better understanding of the issues. For instance, Finet brings back the notion of surplus concerning Hydro-Québec production and how winter "peaks" is one of the arguments justifying the pursuit of power-plant development. Her meeting with Farès Khoury, President of Étude Économique Conseil (EEC – Economic Evaluation Counsel, my translation), confronts her lack of understanding of the issues at stake when decision-makers decide to build a new dam project. In this interview, she learns that new hydroelectric projects are based on prospectives – evaluating what the demand in hydroelectricity will be in thirty years for instance (Beaulieu 2019). It is only the last two episodes that Beaulieu's understanding has gained credibility from experts. Still, as a woman and actress, she is repeatedly faced with the need to prove to the experts, scientists, or high placed people at Hydro-Québec that she is credible. Her strategy is to expose what she has gathered on a specific subject she is inquiring her interviewee on. Once they understand that she understands the topic, they can begin discussing and reflecting on the material. For instance, Eric Martel, then CEO of Hydro-Québec, says he is willing to meet with Beaulieu because she seems "nice" (2019). Beaulieu, underestimated by her interviewee, goes along with her questions on the rentability of La Romaine's dam or on the risk of using prospection like it was done 100 years back when damming the James Bay. Beaulieu therefore challenges the notion of relying only on the effectiveness of the past to decide for the future without considering the present information available by environmental risk reports for instance. In this interview, Garrett observes that Beaulieu who began the inquiry as an overwhelmed citizen who knew nothing of electricity has become a semi-expert who surprised Martel so much with her questions he could not always "field well" (2018). With solar panels becoming cheaper every year, his estimation that prices of hydroelectricity will go higher is questionable (Garrett 2018; Beaulieu 2019). Being underestimated by men occurs a few times, and her feminist research is palpable in her adaptability, her capacity to reflect on herself and the information she is given (Haraway 1988). She therefore shows to the audience that there is not only one way to get to know, to learn (Keller 1983), and I would add, to share vulgarized knowledge. Beaulieu's questioning highlights the fast-changing dynamic of the energy sector that requires adaptability and reconsideration of past approaches. Embodying her research, Beaulieu's play informed the next CEO of Hydro-Québec, Sophie Brochu in her (re)thinking new pathways for HYDRO-

QUÉBEC and led to the Prime Minister, François Legault who is against renewable energies other than hydropower, to relaunch the wind power sector (Girard 2022).

Reading nationalization and René Lévesque, she feels as if his speech on Hydro-Québec's importance in reappropriating power for Quebecers, his "J'aime" (love in French) seemed sincere. Hydro-Québec once helped Quebecers regain a sense of national identity. And love needs time. Once you love, you cannot be indifferent (Beaulieu 2019).

Through learning to love Hydro, Beaulieu's approach is built in care, and she wants the play to incorporate that care in the electrical and energy issues (Puig de la Bellecasa 2010). Keller may be writing about the McClintock's scientific methods, but in science and technologies studies, this knowledge still needs to be presented to a larger public, which requires thorough responsibility and care from the researcher. Finally, Beaulieu's approach is written in love and care and the ethical obligations of caring for electricity's prediction in the future is "articulated as existential and concrete necessities" (Puig de la Bellecasa 2010, 159). Beaulieu's awakening of the urgency of Hydro-Québec's related issues translates in her taking up this project that terrified her (Beaulieu 2019).

4.5 Becoming vulnerable

Beaulieu's vulnerability is first enacted in the format of the play. As explained during her interview with Guillaume Wagner (2020), a comedian and host in his podcast, *J'aime Hydro* is very personal. Beaulieu is the researcher, the writer, and the main narrator and character of the play. She cannot hide behind an invented character which makes her vulnerable to people's appreciation meaning "if [they] don't like *J'aime Hydro*, [they] don't like me" (Beaulieu 2019, my translation). While it makes her vulnerable, it is intentional, and inspired by stand-up comedy that allows for more exchange between the public and the actor. Getting rid of the fourth wall of theater – the invisible wall that separates the audience from actors, takes advantage of the public's presence and offers the opportunity to reach out to the public and adapt to different audiences as well as refer to current events she would add to the play (Beaulieu 2019). Furthermore, in Québec, stand up comedy is more popular than theater which made the play more accessible. Her flexibility and vulnerability allowed for comical anecdotes generating laugher, tears and sometimes screams which can help involve people affectively with the play's goal – to (re)think Quebec' energy futures towards transitioning to other energy sources than hydroelectricity.

The third episode is the darkest for Beaulieu. On the verge of depression, the play tells the events of a call Beaulieu and Soutar shared where Beaulieu is on the verge of abandoning the project. She says she is intoxicated by the project (Beaulieu 2019). Soutar's replies that Beaulieu took on this project and is now responsible for it (ibid). In this highly vulnerable scene, Beaulieu is lost, and Soutar's words resonate and remind her that care in Haraway's sense of caring as "wet, emotional, messy, and demanding of the best thinking one has ever done. That is one reason we need speculative fabulation" (2011, 102). Caring is not meant to be easy. I felt empathy towards Beaulieu feeling powerless in this issue that surpasses her. I felt understood in terms of my own struggles towards researching electricity and I only grew to appreciate her character and listen more attentively to what she was saying. By sharing this period with the participants, Beaulieu has become more confident in her project and reminds listeners that it is OK to struggle within care. Haraway writes that 'location is about vulnerability' (1988, 590). Beaulieu's vulnerability accounts for the apparatus of bodily production and creates a relatable space for participants. By sharing personal challenges and uncertainties, Beaulieu opens the door for participants to embrace their own vulnerabilities and those of others. This approach facilitates a more receptive atmosphere, encouraging participants to be open to learn and set the tone towards (re)thinking electric practices towards more responsible ones.

4.6 Affected in more-than-human world

The play is composed of many segments that detail Beaulieu struggles in her love life. While it is sometimes used to keep the play interesting and lively throughout this complex topic, Beaulieu's vulnerability is also an important connection between her personal life and the vulnerability of all agents connected by the energy system and electricity. Here, affective independence would make it difficult to build deep intimate relationships and attachments to *J'aime Hydro* as the play explores the province's attachment to Hydro-Québec. This attachment is one of interdependence. If we consider that for now, Hydro-Québec being the only energy supplier, we are co-dependant in our dependence of electricity. In this relational assemblage, capitalism and settler colonialism erases other considerations than rentability and neglect preoccupations for the land, the environment (Liboiron 2021). In this argument, nonhuman others are not accounted for in our entangled world. Rita Mestokosho, an Innu poet, writer, and counsellor for culture and education in the Innu nation living in the communities situated along La Romaine's mouth teaches Beaulieu this notion of entanglement that Beaulieu then tries to account for in the

play by including nonhuman actors impacted amid our electrical dependence. Beaulieu was reluctant to share this moment because it moved her deeply and changed her understanding of the entanglements with the nonhuman and more-than-human world. Soutar pushed her because this vulnerability exposed how interspecies are entangled in this shared vulnerability that include electricity's infrastructures. Mestokosho speaks of Indigenous concepts about rivers and trees as being kin. Kin, according to Aboriginal knowledge Deborah Bird Rose (2004) works with and that Haraway draws from understands country as a "multidimensional matrix of relationships: '[that] consists of people, animals, plans, Dreamings, underground, earth, soils, minerals, waters, surface water, and air. […] those who destroy their country destroy themselves'" (cited in Haraway 2011, 100-1). Mestokosho says that "La Romaine came like the wind and left a scar. A scar on people's hearts. An important scar on the territory. A scar that still hurts. And us, Innus, we participate to this scar" (Beaulieu 2019, my translation). Here, Mestokosho deploys an understanding of rivers as active, not passive objects for which we should study health in relation to hydropower impact (Haraway 1988). Rivers are more than resources for hydropower that can control through engineering. Rivers are kin. While this is not specifically towards electricity, it challenges the audience's understanding that nature is not composed of passive resources to be exploited and destroyed for the good of settler colonialism (Kinder 2021). Furthermore, as she claims Innu participates to the scar, she claims that they are partly responsible for the scar. This sense of responsibility underlying an obligation to care of a country that included the ancestors and future generations who will be impacted by the results of La Romaine's power-plant (Haraway 2011). Bakke draws on Despret informed by Haraway on being affected by our relations rather than objects; therefore, by relocating hydroelectricity within relationalities allows the audience to be affected by electricity through its relations with the environment, nonhumans, and humans (Despret 2017 in Bakke 2019). I grew understanding the assemblages of water, animals, people, and infrastructure during the play as I witnessed the encounters with all agents that would voice those who cannot speak such as the scars on the territory as Mestokosho coins it. They are active agents in relations to one another. Mestokosho is therefore promoting Indigenous (and feminist) epistemologies of the apparatus of knowledge production in which the world – rivers, electricity, resists being reduces to mere resources (ibid). That day when Beaulieu meets with Mestokosho, Beaulieu is heavy and sad because of love problems, and Mestokosho tells Beaulieu that part of her problem is that she is not thankful enough for what the Earth gives. Mestokosho tells Beaulieu she is not grounded in earth, she should thank Earth for the air she breathes, thank

the sky, rivers (2019). This resonates with Hall (2015) and the notion of kin she shares. Electricity and its infrastructure are part of the assemblage that we should be thankful for (Bennett 2001). Through learning to thank what Earth gives, Beaulieu learns herself to do so, adapts her approach as we will see along the analysis and share Mestokosho wisdom with the audience. Along with her teachings of kinship to the detriment of money for which her words cannot win, she tends to Beaulieu's "heaviness" (2019, my translation). To free Beaulieu from her burdens, Mestokosho encourages Beaulieu to find her voice and brings Beaulieu to scream her name out loud, multiple times "CHRISTINE". This is the most vulnerable Beaulieu gets during the play. The four members of the audience (and listeners), I have spoken with remembered this scene vividly, some, like Annie, was reminded of her years spent alongside the Cree communities in the James Bay and cried so much and for so long that her partner got worried. She was deeply touched by the scream and by Beaulieu finding her voice. As the public grows closer to Beaulieu, they become more and more invested in her quest. Beaulieu's storytelling, her voice trembling as she retells her encounter with Mestokosho, vibrates within the audience (Ivinson 2021). Moved by her emotional journey to unravel whether Hydro-Québec should turn to other strategies to generate electricity rather than damming large bodies of water, the audience is changing and reflecting on their own journey and position on electricity. They begin to realize that the play is more than just *about* Hydro-Québec but turns sensibility to how things connect in our electrical dependence. At this point in the play, Beaulieu is more comfortable with her emotions and her vulnerability. Her gained confidence occurs as she is increasingly convinced that Quebec needs an energy transition or at least focus on energy efficiency because from her observations and interviews on the North Coast, she is less and less convinced she can see any reason that would justify another damming project according to the alternative options and the detrimental effects on the environment. Her emotional journey transmits excitement to her public.

4.7 Learning to love and care with hydro

Beaulieu learns about interconnectedness of all things involved in life within her encounter with Mestokosho (Puig de la Bellecasa 2010), which guides the interviews she will have afterwards with environmental experts. Insisting on the entanglements is addressing misconceptions and teaching participants to love (and care) for electricity and the electrical system. A significant aspect of Beaulieu's transformation lies in her journey to self-love, which extends to her relationship with Hydro-Québec, electricity, and the energy

system. To quote Soutar: “Christine, you are now in fusion with Hydro-Québec” (Beaulieu 2019, my translation). Based on the title *J’aime Hydro* as well as Beaulieu’s evolution during the play, I interpret Beaulieu’s emotional involvement as initially sharing “appreciation” towards Hydro-Québec, energy, and electricity. Through her personal growth, her “appreciation” turns into love, care, and responsibility. The kind of love here resonates with the type of love that Piccinni urges to deploy towards the products of technology which is a love of the “familial variety, with its overtones of responsibility, ethical guidance and life-long commitment” (Millner 2000 in Haraway 2011, 102). Beaulieu is questioning Hydro-Québec’s decisions because its infrastructure has been created by humans, but they are part of the natureculture world because humans are not the only affecting beings affected by the energy sectors. Beaulieu’s questioning of Hydro-Québec underlines a fear that the obsolete approach to the energy system is not enough to fulfill our duty to care for things we created (Piccinni 2003 in Haraway 2014). This obligation to care surpasses care for the infrastructure, thus electricity at the intersection of natural and technological, offers us a way to encompass for the natural, the technological, the good or not (ibid) which will hopefully result in a stronger ecological sense (Jensen 2019) This emotional evolution is entwined with the more-than-human world connected to her research. Beaulieu's exploration of love cultivates an attitude of care and responsibility because instead of stopping her research once she discovered that hydroelectricity was not profitable, she continued her research to uncover the impacts of hydroelectricity on the nonhuman world that relate to the interdependence of all things related to the generation, supply, and consumption of electricity.

As the play advances, Beaulieu becomes sensitive to the larger spectrum of issues that relate to Hydro-Québec. Through learning to love Hydro-Québec, she faces the need to spread her love to all things connected to domestic electricity. She claims that her love is inevitable because of the existing co-dependence between electricity and humans but that this love must be extended to nonhumans and more-than-human others. The negative consequences of hydroelectricity are exemplified. Near the construction site of La Romaine, the environmental activist Jacques Gélineau, raised concerns about the impact on the river’s health and its inhabitant species, such as eelgrass, the project could have (Beaulieu 2019). The people from the region, where jobs are missing, were worried they could lose the chance to get a contract. He was met with such hostility from the population that he would always carry pepper spray on him (Beaulieu 2019). During the interview, Gélineau claims that people in the region want jobs, and that the environment is considered a side issue; but he

adds that what people lack is an understanding of the importance of river's health for humans as well. Gélineau presents a case of 'situated relationalities' (Puig de la Bellecasa 2010) and potential negative impacts of dams evoking the interconnectedness of people, technology, and nature and how there is no separation. He describes the case of eelgrass, a marine plant that depends on the characteristics of the site it implanted. Any perturbation of its ecosystem can threaten its survival. One of Canada's biggest eelgrass zones was in the James Bay and almost disappeared since the dams were built a hundred years ago. Dams change water flows which affects water's salinity that may affect eelgrass. Eelgrasses are essential to protect fish, and hence the fisheries and people's food (Beaulieu 2019). Gélineau points to the troubling fact that Hydro-Québec's studies of environmental impacts of the dams' construction are always done by experts that are paid by Hydro-Québec which in turn diminishes the credibility of the documents produced. This example demonstrates how electricity generation permitted by technology is inextricably connected to animal, plants, humans, technologies, water resources, etc. (Puig de la Bellecasa 2010). It also attends to an important misconception about electricity present in the general population. Quebecers are less concerned about the energy crisis because there are misconceptions over the "cleanliness" of hydroelectricity. As a renewable energy, hydroelectricity evades concerns of decarbonization wrongfully because the flooding of hundreds of kilometers of the ground emits greenhouse gases such as carbon dioxide, and methane (Beaulieu 2019). The play works towards correcting misconceptions regarding Hydro-Québec's lack of transparency, the energy system, and our electric future.

J'aime Hydro presents the interconnectedness of the electric system and the energy system as always social, political, economical, technological, and environmental in a logic that moves towards affirming natureculture. Learning to care about and for Hydro Quebec; the energy sector; the means to generate, transport, and benefit from electricity; the resources; the sacrificed rivers and ecosystems; the deadly accidents that occurred on the construction site, the Innu community, the workers who lack of job opportunities in remote regions, the workers who did not get work contracts; the dead and wasted trees left in the reservoir to rot; the greenhouse gases freed by flooding caused by the dam construction, and other entanglements between humans and more-than-humans evoked in the play. It becomes clear that Beaulieu initially underestimated how intertwined everything is. Beaulieu learned to care for these entanglements. As care "*is* a form of relationship" it changes our utilitarian relationship to electricity and "*creates* relationality" (Puig de la Bellecasa 2010, 164,

emphasis in original). Agents interconnected within the generation and distribution of electricity previously demonstrate how "nonhuman agencies are taking care of many human needs" (ibid), therefore humans, as urged by Beaulieu, "have their own tasks in the maintenance of the web of caring" (ibid). It is no accident that the title Beaulieu chose is *J'aime Hydro* which translates to "I love Hydro". In French there is no distinction between "like" and "love", both words can be translated as *aimer.* She insists on the choice of love and not like in explaining that it is an interdependency and that we must love Hydro to care for Hydro. She purposely left the word "Hydro" standing alone without the "Quebec" because she did not necessarily mean it as loving Hydro-Québec. She wanted people to question the meaning of "Hydro". Hydro also means water, and deeply moved by her encounter with Mestokosho, I think Beaulieu was trying to apply what she had learned from this indigenous scholar and poet – to thank rivers for the electricity they provide us with because of the generosity with which they provide us with: water, fish, electricity, and more. She reminded Beaulieu of the importance to be thankful and to thank water and rivers that provide a certain shift in her understanding of natureculture and while she is not yet in kinship the world, I interpreted her insistence to reinstate this thankfulness as a way to become responsible for the nonhuman and more-than-human worlds. In a way I see the title as an homage for what Rita taught her in this moment both impregnated in self-love and collective love. She is thus encouraging the participants, but also the people she interviewed to care for Hydro.

The entanglements of the humans and more-than-human world not only shift the understanding of the world in a perspective of natureculture, but also from individual to collective responsibility. The "love" becomes contagious and includes a larger spectrum of what is to care for. My interviews with members of the audience of *J'aime Hydro* have provided evidence for a shift in individual's reflection on how their behaviour has impacted others (humans and nonhumans others). One participant told me that they changed their views of the collective impact and concern Quebecers should have. Vincent for instance, who has participated to the live performance of the play in 2019 has told me that since the play he has changed his electricity consumption. He would often leave the lights on for long period of time. He tried to manage heating better during the cold days and adjust to the varying temperature. He also became more conscious of his electricity uses during strong periods of cold. Furthermore, he recommended the play to friends so they could gain awareness from the issues related to Hydro-Québec, hydroelectricity, and their electric

consumption. He finally added that the play can allow a clearer orientation of political choice for the future as participants were left with a better understanding of the economic, social, political, and environmental issues tied to electricity for which the government have a big part to play in. (interview 2023, my translation). Changing everyday practices and behaviour falls into Puig de la Bellecasa's notion of *ethical doings* because it is not activism but as she coins it "uneventful" (2010, 160). Whilst uneventful, it is a characteristic ethical doing that translates into a matter of care. Vincent has grown to care for his electric consumption. Personal electric consumption and reorientation of political action have impact on more than electricity's utility and price – it changes how much electricity is projected for the future, thus impacts future decisions taken by Hydro Quebec and the government which impacts the land and what/who lives on it. Again, what is highlighted is the actor's interdependence in the energy sector.

It also means the play has impacted him on the personal level for the collective good. Patrick, who has also seen the play thinks that the play has a big impact on people living in the cities, far from dams, and thus more tempted to forget (Hird 2012), and less directly impacted –and therefore less concerned with the issues of dam construction. The play reminded the audience of the issues at play. Patrick insists on how much the play has made him think about the disastrous impact of dam constructions on the environment. While he thought he had no say in Hydro-Québec's decision making, Patrick realized that he is a citizen also in relation to electricity and can and should get involved and be interested in Québec's energy futures which will greatly depend on Hydro Quebec's decisions. In this way, Patrick found himself caring about and with electricity (interview 2023, my translation). Beaulieu inspires *caring with* electricity through *thinking-with* its infrastructures (Schrader 2010).

Beaulieu began the inquiry with the desire to answer her question about the relationship between Hydro-Québec and Québec's population. Throughout this project, she shifted from a focus on the actions and specificities of Hydro-Québec to a larger investigation on the electrical system by focusing on the impacts of electrical infrastructure of hydropower on the environment and on communities.

The question about building further hydroelectric dams is asked by Beaulieu based on preoccupations for the rivers; the ecosystems of the rivers; the construction builders on site who seemed to have been neglected from her findings; the trees that were cut for the

worksite and never picked up, thus a wasted life and an opportunity to use resources appropriately; the communities impacted the most; and more. These preoccupations echo with Puig de la Bellecasa's "question of caring [that] might engage with thorny questions concerning how to kill and for what" (2017, 166). Kill here is used metaphorically and literally. For the trees, organisms and rivers, Beaulieu is asking responsibility and care not only to decide whether to build another power-plant, but if we do decide to build, and kill, how do we do it? And she investigates these different elements to become responsible to act responsibly. Therefore, if the decision to build new dams is deemed "necessary" by decision makers, *how* do we do it? How do we avoid shortcuts to save money that cost life? Contractors who had been promised work from the project on La Romaine for instance, submitted contracts to Hydro-Québec that were turned down. They later learned that contracts were emitted for half the price of the submission they had submitted to Hydro-Québec. In the field of construction, the play informs us that it is not possible to offer submission for half the price because it can only mean that not all the regulations are followed. As it occurred in the North Coast construction of La Romaine, it leads to questioning ethical approach to selection of contracts and raise worrisome concerning Hydro-Québec construction – privately managed, to make decision that apparently resulted lack of security that causing tragic four workers death (Beaulieu 2019). Those caring questions are putting in relation the interdependency of all actors impacted, implicated in dams' building because "care is embedded in the practices that maintain the webs of relationality that we form" (Puig de la Bellecasa 2010, 167). Not everyone is cared for in the same manner, but everyone and everything needs to be accounted for. As one of the main issues in Québec now is related to waste of energy surpluses, if care towards electricity's generation and proper isolation is not essential compared to electricity production, it is not possible to think towards our energy futures.

4.8 Awareness, and surprise

Providing answers to inconsistencies with Hydro-Québec, the play provoked reconsideration from participants regarding their political decisions over electricity, their social responsibility, and their responsibility towards possible energy futures. The four interviews I conducted, and my personal experience have noticed a general sense of awareness gained from the play about the energy issues in Québec and the importance of knowledge regarding electricity and the energy system. The three interviewed participants evoked their surprise regarding the negative impacts of hydroelectric dams on the

environment, fisheries, land, animals, and even the promised jobs that end up not materialising. What concerned them most was the surplus of electricity generated that could be saved from better isolations of houses, dam projects knowingly were geared to produce more electricity. Both Vincent and Émile recalled changing their position on Hydro-Québec and now believed that there was a need for energy transition that would as least invest in developing alternative renewable energy sources other renewable energies such as wind and solar – that are not without disadvantages, they are unreliable, but could compensate for the peaks of energy demand that has justified the project on La Romaine, as well as energy saving. Émile said he was disappointed, and even felt betrayed by his ignorance about the detriments of hydroelectricity. When Beaulieu discusses about the need for further power-plant and how the decisions are taken by Hydro-Québec with Pierre-Luc Dégagnier, then vice-president of corporate affairs of Hydro-Québec, or the prime Minister of Québec, François Legault, both argued for the need of dam construction because electricity must be planned in terms of future consumption needs. Although the past fifteen years have not seen an increase in the consumption of electricity, their narratives insist that there inevitably will be an increase in the next fifty years (Beaulieu 2019).

For me, this argumentation perfectly evokes the difficulty to think with electricity evoked by Gretchen Bakke (2019). I think that the play presents a way to think differently about electricity because it insists on the need to change the approach that has been at play since the 19th century. Beaulieu shows how other considerations involved in of the world's entanglement with hydropower need to be considered in deciding to build another dam or not. At the end of episode five, Beaulieu claims that Dégagnier's approach to energy future is dangerous and that it scares her. Therefore, Beaulieu is not suggesting that we should never consider building dams, but that we should diversify our energy practices and based the decision on more than future predictions and hope that the prices of hydroelectricity on the market will rise again (Beaulieu).

Both in the interviews I conducted, and the blog posts on J'aime Hydro, the audience described recommending the play to others. Listening to J'aime Hydro sparked discussion with others and attended to their own misconceptions. For instance, Émile told his father to listen to the podcast to learn more about the issues related to hydroelectricity. Patrick insisted that individual responsibility was not enough to change Hydro-Québec's decision-making but that becoming aware of the issues through the play informs more people and can lead to collective responsibility that can have an impact on the politics. Furthermore, while also

venting the advantages of recommending the play, Vincent acknowledges that the accessibility of the play can reach a larger audience which is important so that more people question their relationship to electricity and the energy system.

4.9 Conclusion

To conclude, my analysis has shown that *J'aime Hydro* is the enactment of the changes experienced by a researcher who feels for her research and takes the time to get to know her subject of hydropower and how produces responsible knowledge (Keller 1983). I claim the methodology of Beaulieu's work inspires the participants to (re)think their relationship towards electricity and the energy system towards responsibility and care. Beaulieu's approach to her investigation on Hydro-Québec including the energy and electricity issues of the province is adopting feminist research methods that reinstate the values of responsibility, vulnerability and care towards electricity and energy. Questioning what it means to be rich, the appropriation of the territory and degradation of the environment for the purpose of a potentially obsolete technology and investment is dealt with responsibility and vulnerability throughout the process and inspires the participant to revaluate the way they approach questions of electricity and energy more carefully. The play is educational in the knowledge it shares on electricity and energy as well as offering new ways to think critically and feel responsible for these issues. I chose the play for my analysis of art about or working with electricity because Beaulieu's play occurred for similar reasons as the issues related to our energy futures stated by electrical anthropologists. Gatekeeping by experts (Ortar 2019) in a similar way as Hydro-Québec. Misconceptions about energy's cleanliness and functioning (Kinder 2021; Abram & al. 2019). An overall attitude of taken electricity for granted (Pink 2019). The play covers notion of theoretical understanding of electricity, but one cannot care about electricity without understanding how resources, people, nature, politics, and more are interconnected.

Bakke (2016;2019) insists that a worldwide problem on the future of energy might be dealt with on a national level but energy activists hope for humans to recognize that electricity does not know borders and we could interconnect to where the sun is shining or the wind blowing. As the U.S. population is becoming more critical of addition power lines to the grid to allow this connectivity and as the grid has not been conceptualized to sustain renewables' intermittent workings (Bakke 2016). In the US, there is no big monopoly of energy generator and supplier. Projects such as *J'aime Hydro* can be seen as very context oriented, but it can still inspire more art, and more inclusion of the population to understand

the electrical system. Different nations rely on different energy sources, but the issues related to the population usually concern the classical misconceptions elaborated in the Literature Review chapter. Electrical anthropologists have insisted that misconceptions, gatekeeping, and more has contributed to the population's misunderstanding and lack of responsibility.

Chapter 5 Discussion and Conclusions

5.1 Discussion: A dialogue between *Electrical Walks* and *J'aime Hydro*

Introduction

In this section, I put in dialogue the findings and arguments from the analysis of the two works of art discussed in chapters 3 and 4, and look at the interconnectedness of different approaches to electrical art by returning to the research question: how works of electric art can challenge the relationship of ordinary people to electricity? I investigate in what ways the two works art analyzed in this research complementarily challenged my relationship to electricity towards more response-able and responsible approaches. The goal of this thesis has been to examine the possibilities that lie in unexpected locations – electric art and offer new ways to think and work with electricity.

Both artists are working within male dominated discipline. Beaulieu is doing research on the energy sector in Quebec, and Kubisch is a pioneer sound artist who as felt in her discipline the difficulty of becoming renown as a female performer (Kubisch 2018). Beaulieu as well as mentioned that the woman gaze in looking at the energy system was felt and made a difference (Girard 2018). As rare woman in male dominated space, it is not from their mention of the dynamic of the field, but more in their approach and methodology that I read their work of arts as feminist. Indeed, they nurture their work of art in ways that inspire the audience to become attentive to the artwork and the artist. Their responsibility for their research and creation process – Beaulieu through the emotional up and downs she experienced from doubting herself to becoming confident and responsible for her investigation and confronting Hydro-Québec in its decision-making process that still impacts their decision today as we can see from the initiation of the wind project by the government Legault (Girard 2018). Kubisch on the other hand nurtures the magnetic world and the electromagnetic happenings she has been working with for over forty years, still letting her be surprised and touched by her discoveries (Keller 1983). In this section, I elaborate on the disrupting binaries of the nature-culture divide their artworks, set in more-than-human world generate. Accounting for humans, nonhumans and the more-than-humans opens a door to recognize electricity's agency that develops along the experience of the works of art. I bring back the concepts of anthropology of electricity and feminist epistemologies to come back to the question and discuss the ways participants and listeners are challenged in their relationship to electricity towards responsibility, response-ability and care.

Rethinking in awareness

As mentioned before in the thesis, one aspect that anthropologists of electricity ongoingly observe that makes it difficult to (re)think electricity is the fact that it is invisible (Anusas and Ingold 2015; Boyer 2015). The two artists have found ways to make electricity visible through hearing which offers non-visual ways to feel, be touched, see, and get to know electricity (Springgay and Truman 2018). As rethinking electricity comes with the misconceptions or forgotten elements related to the electrical networks including electricity and its infrastructure, Kubisch makes visible electricity in its nature and Beaulieu its system, infrastructure, resources, upon which domestic electricity is generated. The headphones enable hearing electrical fields' vibrations that occur in all electricity working elements from lights to security system. In making electricity visible through a sensorial experience rendering the different emotions experienced from the sensibilization to another 'world' usually (in)audible results in awareness which is the first step towards (re)thinking. It also makes the participant aware of the dependency cities have of electricity which may provoke questioning that has an impact on participants and open the potential to (re)think their relationship to electricity. Since electric current is only possible for human use through its generation from a primary energy source that is transformed, electricity is linked to the energy sector, and the resources either renewable or not that is connected to it. Thus, the becoming responsible and response-able of humans' relationship with electricity needs a deeper understanding of electricity than of its nature, needs to deploy the interconnectedness of all things related to its generation, its policy, its demand, its future. This is where a project like Beaulieu comes in force. By embracing the complexity of the electric system focused on hydropower in Québec, the specificity of her work embraces the fact that electricity is political, social, economic, and technologic but mostly cultural (Abram 2019; Jensen 2019). When sounds of electricity resonate while I listen to the podcast, I see myself walking in the magnetic world and I am again reminded of the sound of the waterfalls that have been replaced by those (in)audible electric sounds.

Feminist epistemologies within more-than-human world

Christina Kubisch altered my mind with *Electrical Walk* because it changed my perceptions of electricity. I had never thought anything of electric current, atm machines or lights in the street as musical voices. Since the walk, I cannot help but think about the sounds certain machinery does. It made me more conscious of my reliance to electricity, its omnipresence in cities, and its response-ability as in capacity to respond (Schrader 2010).

Kubisch offers an experience that makes you feel electricity. The electric force touches participants who are humbled by the realization that electricity can respond with a certain aesthetic that is not accessible to humans without technologies such as the headset. Based on the idea that non-human agency comes along new materialism and object-oriented ontology focusing on the force of things (Jensen 2019). This transition requires to see electricity as the "foundational apparatus upon which the experience of modernity has been constituted since the late nineteenth century" (Boyer 2016, 532). The discovery of this (un)known and (in)audible made me feel like electricity was alive, agential, and responding but (un)heard (by humans). Its omnipresence in the city reminded me everything electricity allows me to do. The entanglements of living, nonliving and the more-than-human world is specifically oriented towards the magnetic world but is nonetheless opening participants to larger reconsiderations. While Kubisch lives within a more-than-humans understanding of the world that she shares, through the walk and through her installation work, with the participants. In *J'aime Hydro,* Christine Beaulieu is learning through her research, especially from her contact with Indigenous understanding of the worlds' entanglements. Her meeting with Mestokosho informs shifts the understanding of humans, rivers, dams, electricity, animals, fisheries, fishes, and more as being interconnected, co-dependant beings and elements. J'aime Hydro's contribution to our relationship to electricity lies in making visible the issues of transition, the principle that the challenges regarding our energy and electric futures are more than technological (Abram 2019; Jensen 2019). The methodologies of more-than-human world's is suggesting an approach that steps back from an anthropogenic focus of the solutions. The need to (re)think needs for consideration for what the more-than-human world has to say because it does speak, it is humans who do not listen and do not work with others. Displaying different approaches, Beaulieu has learning about the more-than-human worlds and Kubisch has focused on the magnetic world is complementary has it teaches participants the multiple ways to live and understand natureculture that evolves through opening oneself to new ways to see and think.

The affected body

Both artistic projects are affecting their audience in different ways. By fostering the audience's capacity to listen, and to reposition themselves in their understanding and knowledge of electricity, the two works of art are touching participants through affect. In *Electrical Walk* participants are "touched" by the low frequencies (Campt 2017) which makes them vulnerable and emotionally interwoven with the art practice. As I walked, I felt

touched to be granted this experience within the magnetic world. *J'aime Hydro* offers a different way to affect people that results from Beaulieu's vulnerability in showing her emotions, her struggle and evolution throughout her investigation of the electrical system of hydropower. Beaulieu is speaking directly to the audience. Even in the podcast, it feels as such because she is authentically herself. Furthermore, the podcast offers a way to always return to the play and discover details that you had not noticed at first. *Electrical Walk* is marked in my memory because I now associate specific locations in Prague to some sounds. These art projects inspire to become attuned to sensations that move the body and to ask what they do to you? I think they open you to new ways of thinking. I think that when an artist is nurturing their art projects like we have seen Kubisch and her "electromagnetic babies" (2020) or with Beaulieu who was completely absorbed, overwhelmed but in the end loving and care for her project and for what she would give to participants.

5.2 Conclusion

The discussion above restated the main research question along with the arguments and analyzed observations that this thesis has developed. Now, I will not return to my findings, but synthesize the different sections of the thesis, its limitations and the final word for future interdisciplinary research within feminist, art, anthropology and science and technology studies.

As I mentioned in the introduction, the symptoms of the energy crisis have been exacerbated by COVID-19 and Russia's war on Ukraine and accelerated the desire and the actions taken by some governments to transition to renewable and low carbon energies. This increased interest in decarbonization is now exposing the limits and issues within the energy systems of different countries. The question of access to electricity has raised concerns considering that the energy crisis has affected vulnerable population disproportionately and again revealing the issues in our energy systems and how in settler colonialism they intertwine with the colonial system that also needs unfolding. Anthropologists of electricity as I claim briefly in the introduction have initiated a turn towards feminists' approach to science and technology studies as limits in transitioning to renewables in the hope for cleaner and more just energy futures must happen within a better understanding of electricity and its infrastructures within more ethical practices. This thesis has aimed to propose such *ethical doings* (Puig de la Bellecasa 2010) through feminist concepts of care, responsibility, and response-ability.

In chapter 1, I have done an extensive review of the existing literature on anthropology of electricity and its infrastructures as well as presenting basic notions of electricity so that the aspects of misconceptions and mismanagements enounced by anthropologists would be understandable. As I would require a proper literature from the basics of electricity and the complexity of the energy system, I had to clearly develop the connections between history of electricity, our increased dependence on it, our forgetfulness due to the infrastructure's conceptualization. The complex nature of electricity coupled with the tendency government, electricity supplier companies and experts have of oversimplification of the principles and issues of electricity and its objectification. The conclusions of anthropologists of electricity are the need for a more ethical approach to our understanding and management of electricity and its infrastructure by reinstating the assemblage of its infrastructure that includes the environment and communities (Bennett 2001; Abram et al. 2019; Pink 2011). I have then connected different approaches to art from electric art to feminist art studies that focused on the production of affect, sensations, and potential reconsideration of our more-than-human worlds. Finally, concepts of feminist epistemologies and feminist science and technology studies were reviewed based on Haraway and Schrader such as concepts of care, response-ability, responsibility.

In chapter 2, I described the diverse qualitative methods I have used to generate data for the two art projects. Integrating different types of methods by semi-structured interviews, observations of my own experience with electricity along the art projects' experience and my research, a close investigation of existing material on the artists have covered the gaps left by the fact that I have not interviewed them directly. Furthermore, news paper articles were useful to complement my experience and those of the interviewed participants with further contextualization and thoughts about the art projects. My feminist background and profound interest in feminist science and technology studies and epistemologies have equipped me with the capacity to analyze the generated data looking for connections and insights that could be discussed with concepts of situated knowledge, response-ability, responsibility, and care. A close attention to recurring concepts from the data generated through transcription and challenging my thoughts and ideas as I was gathering more data allowed me to produce my first attempt at situated knowledge (Haraway 1988).

In chapter 3, I have presented the analysis of the *Electrical Walks* by Christina Kubisch. This sound and participative art project that brings along participants on the walk to discover the (un)known and (un)heard magnetic world. I have analyzed the research methods

deployed by Kubisch in mapping the city and preparing the walk through the lens of feminist epistemologies as I recognize her relationship to the electromagnetic fields as invoking responsibility and care that can then be translated to the participants. Both the artist's passionate approach to the investigations and the electromagnetic fields perceived in the walk affect participants and may provoke reconsideration of their positionality on electricity as they discover the (un)known. I have argued that the humbling discovery of the limitations of our bodily senses, how the headset enables a feeling of increased capacity is nurturing response-ability and responsibility in the interaction of participant, the magnetic world, and the artist herself.

In chapter 4, I have covered the dense and fascinating documentary play and podcast written by Christine Beaulieu. The contextualization of Québec's energy system, or its infrastructure of hydropower through the understanding of the complex relationship between a state utility – Hydro-Québec and Quebecers have provided insightful demonstrations of the entanglement of electricity – part of the more-than-human world, humans, and nonhumans within cultural, economical, technological, philosophical, and political relations. I have argued that the research methodology of Beaulieu, her positionality, her vulnerability, her growing sense of responsibility towards the production of situated knowledge and understanding of need to refocus her life, and electrical issues within natureculture. As the play follows Beaulieu from feeling concerned by the electrical system to becoming a semi-expert that understands the complexity of entanglements through her learning of Indigenous knowledge, Beaulieu is teaching her audience as she is retelling her journey to learn. The play is insightful in its capacity to present issues of electricity and inspiring a growing sense of response-ability – as the need to cultivate the capacity of response by infrastructures of electricity and its entanglements with rivers, trees, and communities. Furthermore, her feminist epistemological approach to her research have produced situated knowledge and foster a sense of responsibility towards electric practices and its entanglements to participants.

My thesis has been limited by multiple aspects considering this interdisciplinary approach. First, by limited knowledge in electricity. There were concepts that I developed that I still struggle with and can be limiting to the development of certain arguments. As I wrote an interdisciplinary work in notions, I have only worked with for two years, my understanding and interpretations of certain concepts of feminist epistemologies have sometimes lacked deepening such as situated knowledge from Haraway (1988) that would

have needed a further understanding of the apparatus of bodily production. Notions I have borrowed from Indigenous epistemologies and knowledge have left me hesitant. I did not want to appropriate notions that were not mine to use in writing a paper from a white settler point of view that only portrayed white settler or white artists. Therefore, I have attempted to touch upon kinship to respect the insightful understanding of the world from Rita Mestokosho.

I think that this research as produced contributions pursuing the work anthropologist of electricity's turn to feminist science studies and new materialism. I have tried to present possible ways to learn to care and become responsible and response-able towards electricity and its infrastructure through electrical art. I believe that locating possibilities in unexpected places can foster new imaginings and further push for a decentring of western philosophy separating nature and culture. I think that feminist electrical art does push participants and listeners to (re)think their relationship to electricity because I think that is what the artists do and encourage the audience to do or at least think about. (Re)thinking relationship to electricity is also about recognizing electricity as a "force" (Bakke 2016; 2019) and see it as an assemblages of infrastructures located in natureculture. I understand the works of art I have analyzed as reinstating electricity's agency in its capacity to respond (Haraway 2008) that surpasses human control. Discovering the (un)known magnetic world is repositioning humans as part of more-than-human worlds in which they should always remain surprised by their environment and be attentive to what may be there outside of perceptible senses. Beaulieu's contribution lies in her capacity to become responsible that resulted from her research. Beaulieu is offering an approach that is fostering the assemblage of the infrastructure of electricity (Bennett 2001). It is electricity that has allowed us to do so much in our "modern life". Without electricity, there would not be any of the technologies of communication that we became so dependent of (Abram et al. 2019). To conclude, electricity and the assemblage of its infrastructure is giving us the means to shift our relationship to "it" but for that we must listen to its interconnectedness in nature as it would exist without humans. Finally, I come back to this question by Puig de la Bellecasa (2010) "how do we engage with accountable forms of ethico-political caring that respond to alterity without nurturing purist separations between humans and non-humans? (2010,159) I think that feminist electrical art is a first step to look for that possibility. While done by humans and still centering in the case of *J'aime Hydro* on human doings, but slowly decentering as she learns, and the audience learns to listen to the entanglements of electrical infrastructures.

Mestokosho as answered this by saying the issue in Beaulieu's life, which also related to the issues of the energy crisis, are related in our tendency to forget to be thankful (2019). This informs of the need to listen to nonhuman, in a listening that learns from and adapts to the environment. Even when the grid breakdown it speaks, and it provides insights on how to address things or where to look for solutions. Again, Kubisch's investigative walks offers a way for humans to feel and hear the inaccessible sensorial world which completely gives power to electricity and offers humans the chance to interact with the magnetic field. This thesis as looked for ways electrical art done by women can remind humans to decenter from themselves and look for possibilities in their relations to nonhuman and more-than-human others. Electricity is changing our cultural and technological world continuously, so we must nurture its capacity to respond and be accountable for our electrical practices.

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APPENDIX A

Questions for interview with Anna Kodl on *Electrical Walk.*

Interview date: 2023, February 27

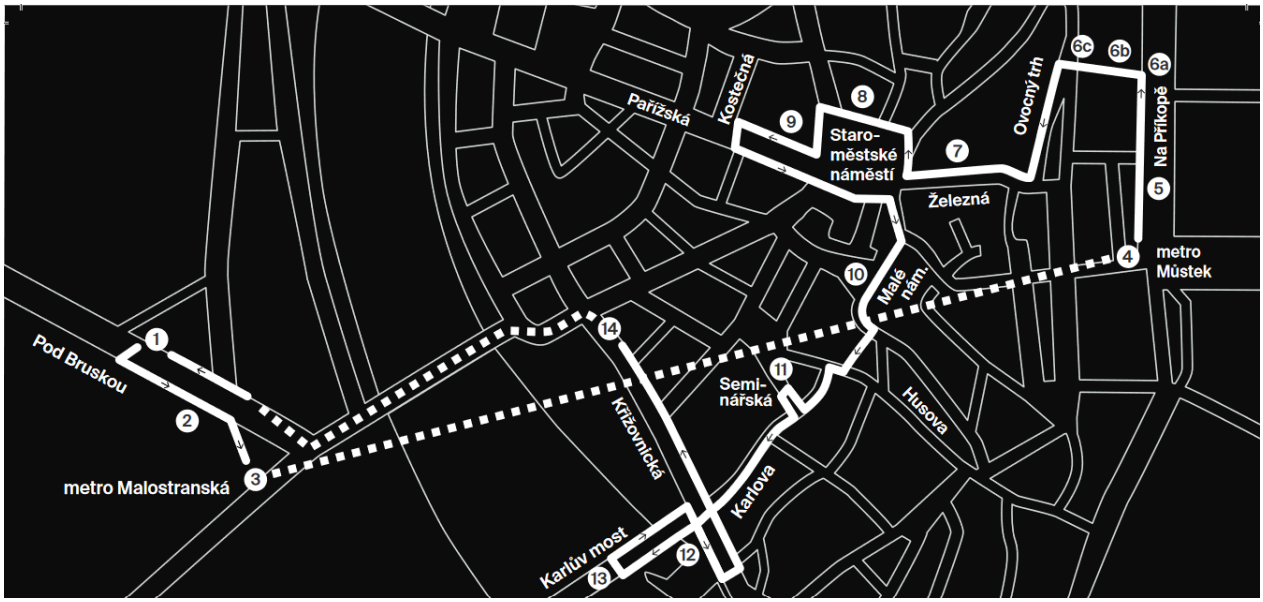
1. Tell me how you felt during the electrical walk in Prague on May 5th with Christina Kubisch?
2. Did the headphones influence your walk, what you were looking at? What emotions or sensations come to mind?
3. When hearing the electromagnetic fields present in the city, what did you think about during/after?
4. Did you think of the presence of electricity during the tour? After? in what ways?
5. Electrical Walk changed my perception of electricity as it made me feel vulnerable while walking around the city with the headphones and seeing things (cameras, lights) that I would normally not pay attention to. I saw in this artistic project working with electricity the potential to discuss a certain ethics of care/responsibility in our energy practices more largely. More precisely,
with global warming and injustice in access to electricity (Native populations in Northern Quebec situated near dams producing electricity but not connected to the grid) requires us to rethink our energy practices (the way we produce and consume it). Electricity in its complex nature has been conceptualized by the capitalist economy as a good that we now take for granted.
6. Do you think that art projects such as Electrical Walks can lead one to rethink its personal and collective approach to electricity? Have you experience something like that?
7. Do you think that Electrical Walks can change our relationship with electricity towards one of care?
8. As a doctorate student in art history, what more can you tell me about your experience?
9. From our brief discussion on ethics of care/responsibility, does it make you think of any other art pieces working with

APPENDIX B

Interview questions asked about the play and/or the podcast *J'aime Hydro* by Christine Beaulieu:

1. Can you tell me a bit about your experience seeing the play? What was your initial impression?
2. Did the play address any themes related to electricity or the electrical system? If so, how were these themes portrayed?
3. Did the play challenge or reinforce any assumptions you had about electricity or the electrical system? Can you give an example?
4. Were there any moments in the play that stood out to you in terms of their portrayal of electricity or the electrical system? Why were these moments significant?
5. Did seeing the play make you question your perspective on electricity or the electrical system in any way? If so, can you describe how?
6. Do you think the play conveyed a particular message or viewpoint about electricity or the electrical system? If so, what was it?
7. Have you taken any actions or made any changes in your own life or behavior as a result of seeing the play and its portrayal of electricity or the electrical system?
8. Would you recommend this play to others who are interested in exploring issues related to electricity or the electrical system? Why or why not?

APPENDIX C



Picture 1: Map of the walk in Prag, May 5th 2022, Retrieved from Electricalwalks.org by Kubisch, 2022.

Picture 2: *Electrical Walk*, May 5th 2022, My picture.