

*The Radiant Unknown:  
Juan Downey's Aesthetics of Energy*

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## Abstract

This thesis argues for a new interpretation of the work of Chilean multimedia artist Juan Downey (1940-1993) under the banner of an aesthetics of energy. The aesthetics of energy positions Downey's interest in the artistic potentials of energy—and electromagnetism specifically—as a guiding frame through which to understand his practice. This means attending to how, and towards what ends, Downey harnessed different energy forms in the making of his sculptures, installations, performances, videos, and even drawings. In privileging Downey's career-long investment in the aesthetics of energy, this dissertation seeks to contribute to the extant literature on the artist. Until now, scholars have largely focused on Downey's references to cybernetic theories of feedback and information, as well as his interrogations of subjectivity and the challenges it poses to representation. These two themes approximately map onto Downey's early and late career, respectively, with scholars noting a clear shift during the mid-1970s from one phase to the other. This dissertation articulates the persistence and transformability of Downey's aesthetics of energy across his practice, and suggests it can provide a novel throughline within an otherwise medially diverse and conceptually wide-ranging body of work. To narrate the developments of Downey's aesthetics of energy, I pay careful material-specific attention to the different forms of energy he deployed in his art (whether they be electromagnetic, sonic, or metabolic), the technical infrastructures that make their harnessing possible (such as the proliferation of portable video in the late-1960s), and the theoretical discourses in which they are figured (as with the focus on energy flows in the development of ecosystem ecology). In these ways, Downey helps us critically sharpen the concept of energy within contemporary art history, grounding it within specific historical moments and tracing its various manifestations. All of this culminates in a new view of Downey's practice, one that asserts not just his significance for postwar media art, but also his relevance for twenty-first century debates concerning the energy humanities, elemental media, and decolonial critiques of extractivism.

## Résumé

La présente thèse plaide pour une nouvelle interprétation de la production de l'artiste multimédia chilien Juan Downey (1940-1993) en tant qu'esthétique de l'énergie. Cette esthétique est avant tout manifeste dans l'intérêt que porte Downey aux potentiels artistiques de l'énergie - et de l'électromagnétisme en particulier - comme cadre de référence à sa pratique multimédiale. La thèse s'intéresse à son exploration de différentes formes d'énergie dans la réalisation de ses sculptures, installations, performances, vidéos et même ses dessins. En postulant que l'ensemble de l'œuvre de Downey est voué (tout au long de sa carrière) au développement d'une esthétique de l'énergie, cette thèse cherche à contribuer à la littérature existante sur l'artiste. Jusqu'à présent, la recherche universitaire sur le travail de Downey a surtout porté sur ses références aux théories cybernétiques de la rétroaction et de l'information, ainsi que sur ses questionnements de la subjectivité et les défis qu'elle pose à la représentation. Ces deux thèmes sont respectivement attribués comme caractéristiques du début et de la fin de la carrière de Downey, issus d'un changement notable d'une phase à l'autre au milieu des années 1970. Cette thèse maintient, au contraire, la persistance et la transformabilité de l'esthétique de l'énergie chez Downey à travers sa pratique, et suggère que cette continuité peut servir de nouveau fil conducteur pour mieux comprendre un corpus d'œuvres vaste et diversifié autant sur le plan conceptuel que sur le plan médiatique et médial. La thèse décrit le développement de l'esthétique de l'énergie de Downey en portant une attention particulière à la matière des différentes formes d'énergie déployées dans son art (qu'elles soient électromagnétiques, sonores ou métaboliques), aux infrastructures techniques qui rendent leur exploitation possible (telles que la prolifération d'appareils vidéo portatifs à la fin des années 1960), et aux discours théoriques dans lesquels ils s'inscrivent (comme l'accent mis sur les flux d'énergie dans le développement de l'écologie des écosystèmes). Ainsi, Downey nous aide à affiner de manière critique le concept d'énergie dans l'histoire de l'art contemporain, en le contextualisant dans des moments historiques spécifiques et en retraçant ses diverses manifestations. La thèse propose en fin de compte une nouvelle vision de la pratique de Downey, qui affirme non seulement son importance pour l'évolution des arts médiatiques d'après-guerre, mais aussi sa pertinence pour l'évolution des débats du XXI<sup>e</sup> siècle concernant les humanités énergétiques, les médias élémentaires et les critiques décoloniales de l'extractivisme.

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I would first like to thank my advisor, Professor Christine Ross, whose patience, guidance, and understanding have been invaluable throughout the conception and writing of this dissertation. Some of my most gratifying moments over the past few years have been reading her positive feedback on chapter drafts, and a large part of my confidence as a writer has come from her compliments. I would also like to thank Professor Yuriko Furuhashi. While not an advisor in an official capacity, Yuri's influence on this project and on my thinking has been immense and I'm extremely grateful for all the forms of support she's offered during my time here at McGill. I want to extend a special bit of thanks to Professor Ina Blom, my master's advisor. I never thought I'd write on video art before taking her seminar on the topic back at the University of Chicago, and I would have never written on Downey's work initially, nor made him the focus of this dissertation years later, if not for her. I also want to thank Professors Darin Barney, Will Straw, and James Nisbet for agreeing to be on my defense committee.

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object always comes first. I have tried—to varying degrees of success—to keep that in mind while writing this dissertation.

I am grateful for the opportunity to have presented my research at different conferences and symposia over the years, including the 8<sup>th</sup> International Conference for Histories of Media Arts, the 20<sup>th</sup> annual Media Ecology Association Convention, and the 2018 University Art Association of Canada Annual Conference. Graduate student conferences here at McGill and the University of Toronto were also key in helping me sharpen my work.

I also want to thank Javier Rivero Ramos at the Juan Downey Foundation for his generous support and assistance. Thanks too are owed to Julieta González and Carla Macchiavello, Downey scholars whom I only corresponded with via email but whose words of encouragement let me know I was onto something promising.

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## Introduction

This thesis argues for a new interpretation of the work of Chilean multimedia artist Juan Downey (1940-1993) under the banner of an aesthetics of energy. The aesthetics of energy positions Downey's interest in the artistic potentials of various energies—and electromagnetism specifically—as a guiding frame through which to understand his practice. This means attending to how, and towards what ends, Downey channeled different energy forms in the making of his sculptures, installations, performances, videos, and even drawings. In privileging Downey's career-long investment in the aesthetics of energy, this dissertation seeks to contribute to the extant literature on the artist. Until now, scholars have largely focused on Downey's references to cybernetic theories of feedback and information, as well as his interrogations of subjectivity and the challenges it poses to representation. These two themes approximately map onto Downey's early and late career, respectively, with scholars noting a clear shift during the mid-1970s from one phase to the other. This dissertation articulates the persistence and transformability of Downey's aesthetics of energy across his practice, and suggests it can provide a novel throughline within an otherwise medially diverse and conceptually wide-ranging body of work. From the vantage of the aesthetics of energy, Downey's significance for the study of contemporary art is seen anew—highlighting his unique contributions to his historical moment and articulating his relevance for our own.

How and when is art (about) energy? On what grounds can it be argued that Downey channels energy in his artistic practice? How does his work channel different types of and approaches to energies? How is his work critical of energies? How can this criticality be understood historically? At base, what do we gain by thinking Downey's practice as an

aesthetics of energy and what makes this aesthetics original and important? These are some of the key questions underlying this dissertation.

Its main claim is that Downey's aesthetics of energy is a concerted, multi-media attempt to understand how energies might play a transformative role in the making of art; how they can be channeled in the formation of objects, environments, and identities; and how, and towards what ends, they have been positioned as resources in the developments of modernity, de/coloniality, and the geopolitics of the Cold War.

This introduction will unpack this definition of the aesthetics of energy, clarify the methodologies that helped shape it, contrast it to the current literature on Downey's practice, and explain how the dissertation's five chapters work to realize it. Beginning with this definition is the first step in equipping the reader with what is required to grasp Downey's practice as an aesthetics of energy, and each of the definition's three clauses are integral components for understanding what that aesthetics is and how it manifests. The following section outlines them turn. The objective here is to clarify what these three components of the aesthetics of energy mean and the methodologies I turn to in unfolding them. With the aesthetics of energy defined, in the next section I provide a brief review of the extant scholarship on Downey's work. This is to articulate what has been said about the artist and how the aesthetics of energy reading I am proposing contributes to that literature. The introduction then concludes with a chapter breakdown. Here I describe how the dissertation's main claim—that Downey's art can be understood as an aesthetics of energy as defined above—is developed across each of the dissertation's five chapters.

What is Downey's Aesthetics of Energy?



This section expands on the definition of the aesthetics of energy above. If the main claim of this dissertation is that Downey's practice can be understood as such an aesthetics, then it is imperative that—from the outset—I be clear about what that aesthetics is and what it entails. That is the objective of this segment. It breaks the aesthetics of energy definition into its three, key components and unfolds what each means and what methodologies I utilize to explain them. Downey's aesthetics of energy is...

*A concerted, multi-media attempt to understand how energies might play a transformative role in the making of art.* This is perhaps the broadest of the definition's three components but it serves a critical, introductory purpose. It describes the central conceit of Downey's aesthetics of energy and the means through which it was expressed. Insisting this aesthetics is about understanding how energies—and electromagnetism especially—might play a transformative role in the making of art casts Downey's practice as both about energies, and developed with the help of energies. More specifically, his practice is about energies in the sense of exploring their presence, their materiality, their effects on and interactions with organic perception and technical media, their cultural specificity, and historicity. His practice is developed with the help of energies insofar as he explored how different energies could be integrated as forms of media for artworks spanning a wide repertoire of artistic mediums, like sculpture, installation, performance, video, and drawing.<sup>1</sup>

This circuits back to the claim that Downey's aesthetics of energy is multi-media (*a concerted multi-media attempt...*). One thing that is critical to mention about Downey's practice—from whatever interpretative angle one may choose—is that it was never bound to a single medium. Downey's practice was about energies and developed through the help of

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<sup>1</sup> This idea of using energies as media (in the sense that plywood and Formica were Downey's electronic sculpture's media) will be unpacked more fully in the second component of the aesthetics of energy definition below.

energies, with both facets expressed across multiple media formats. This key point hints at the persistence and transformability of Downey's aesthetics of energy. For example, it may seem easier or more intuitive to explore the aesthetic potentials of electromagnetism through the video medium, which is literally activated by live electromagnetic signals.<sup>2</sup> But here I am insisting this exploration even took place within mediums that might at first bear little technical connection to energies, such as drawing or performance. To fully appreciate the significance of Downey's aesthetics of energy requires attending to the multi-media nature of his practice, not just singling out those more energetically legible mediums.

In arguing that Downey's practice can be understood as an aesthetics of energy, I am broadly situating this study within a methodological current operating at the intersection of the energy humanities and art history. Over the past decade, there has been increased interest in subjecting the human uses of energies to the interpretative disciplines of history, art history, literature studies, geography, media studies, and other fields that fall within the scope of the humanities. This body of work has been grouped under the term the energy humanities.<sup>3</sup> More specifically, there has been recent writing that attends specifically to the uses of energies within the arts, such as Douglas Kahn's *Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts* (2013) and James Nisbet's *Ecologies, Environments, and Energy Systems in the Art of the 1960s and 1970s* (2014).<sup>4</sup> Kahn's text is noteworthy because of its focus on the energy of

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<sup>2</sup> I make note of this technical connection between video and electromagnetism throughout the dissertation and suggest it is one important reason Downey turned towards video so enthusiastically when he did. This reading of video as inherently electromagnetic in nature is owed to a media archaeological account of the medium. For more, see: Ina Blom, *The Autobiography of Video: The Life and Times of a Memory Technology* (Berlin, Sternberg Press: 2016); and Yvonne Spielmann, *Video: The Reflexive Medium* (Cambridge, MIT Press: 2008). For more on the media archaeological method, see: Erkki Huhtamo and Jussi Parikka, eds., *Media Archeology: Approaches, Applications and Implications* (Berkeley: University of California Press, 2011).

<sup>3</sup> For an overview of the energy humanities, see: Imre Szeman and Dominic Boyer, eds., *Energy Humanities: An Anthology* (Baltimore: Johns Hopkins University Press, 2017).

<sup>4</sup> James Nisbet, *Ecologies, Environments, and Energy Systems in the Art of the 1960s and 1970s* (Cambridge: MIT Press, 2014); Douglas Kahn, *Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts* (Berkeley:

electromagnetism and Nisbet's text is noteworthy because of its special interest in the aesthetic uses of energies during Downey's historical moment—though neither text mentions Downey's work, an omission my thesis aims to redress.

Kahn also edited a series of essays appropriately titled *Energies in the Arts* (2019) that sums up well the methodological shift of this new body of work I see my study fitting into. In the text's introduction, Kahn suggests that understanding the relation between energies, art, and culture requires "consideration on a case-by-case basis where various energies are traced through specifics and set dynamically within contexts, rather than penned in by definitions before they start."<sup>5</sup> Likewise, my dissertation tries to preserve the liveliness of energies as they are channeled in Downey's art and beyond, while paying careful attention to the particularities of their different forms and effects. Moreover, Kahn's use of energies in the plural is deliberate—something I also try to mirror here and throughout the dissertation. Although I rely on the phrase "aesthetics of energy" to describe Downey's work, I do insist multiple energies are at issue in the artist's practice, making sure to be as specific as I can about the nature and role of each. This specificity invites interdisciplinary collaboration, too. For example, in exploring Downey's use of electromagnetism I turn to the terms and history of physics to better understand the energy and the ways it's been described.<sup>6</sup> I do the same with Downey's channeling of the metabolic energies

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University of California Press, 2013). An important prefiguration of this energetic interest in art history can be found in some of the essays included in Bruce Clarke and Linda Dalrymple Henderson, eds., *From Energy to Information: Representation in Science and Technology, Art, and Literature* (Stanford: Stanford University Press, 2002). More specifically, Charlotte Douglas, "Energetic Abstraction: Ostwald, Bogdanov, and Russian Post-Revolutionary Art" (76-94); and Linda Dalrymple Henderson, "Vibratory Modernism: Boccioni, Kupka, and the Ether of Space" (126-49); and Bruce J. Hunt, "Lines of Force, Swirls of Ether" (99-113) have been especially critical in helping me think the history of art and energies.

<sup>5</sup> Douglas Kahn, "Introduction," *Energies in the Arts*, ed. Douglas Kahn (Cambridge, MA: MIT Press, 2019), 2.

<sup>6</sup> A brief example would be the physical concept of the "field," which the discovery and formalization of electromagnetism helped introduce. The field is an entity that is not bounded by the billiard-ball-like objects of Newtonian physics, but is rather present in and effectively distributed across a region of space. Downey's electronic sculptures, for example, as sensitive to the presence of different kinds of electromagnetic fields—ranging from radar waves to cosmic rays. Chapter one explains the significance of this concept for better understanding Downey's aesthetics of energy.

of living things and the disciplines of biology and ecology. This interdisciplinarity seeks to provide the most robust account of the operative energies in Downey's practice.

As we move on to the second and third components of the definition of the aesthetics of energy, this first component—*Downey's practice is a concerted, multi-media attempt to understand how energies might play a transformative role in the making of art*—will be further clarified. And it is to the second component that I will now turn. It states that Downey's aesthetics of energy is about understanding...

*How energies can be channeled in the formation of objects, environments, and identities.*

At this level, the aesthetics of energy is concerned with exploring the constitutive role energies can play within art and beyond. I see this dimension of Downey's practice opening onto two related sets of questions. On the one hand, what are the medial possibilities of energies? How can a specific energy or set of energies operate as the media which makes up an artwork? On the other hand, how can art help reveal the energetic elements of our surroundings? In what ways do energies shape the world around us and what is art's role in materializing this process? Here we are dealing with how energies might transform the materiality of artworks, and how artworks could disclose the materially transformative power of energies.

First, let me explain what I mean about the medial possibilities of energies. I suggest a key element of Downey's aesthetics of energy is his investigations into how energies can be integrated into the material structure of his artworks. An instructive example of this is Downey's electronic sculptures (1967-1969). These works utilized sensors, receivers, and transmitters to detect and make perceivable through transduction into light, sound, or kinetic movement their surrounding electromagnetic environments—sometimes it would be the radar waves of a passing airplane, and other times it would be cosmic rays released from the last gasps of an ancient star.

Viewing Downey's sculptures from the vantage of the aesthetics of energy means positing these energetic fields as integral to the functioning of the works as their technical media or the plywood and Formica that housed them. The critical shift here is thinking electromagnetism as not just a basic power source for electronic media, but as something more, a media in its own right. This has implications not just for the historical scene of the information age—wherein the discourse of dematerialization was rigorously interrogating the limits of what constitutes an art object—but also for the advent of video, one of Downey's preferred mediums and an emblematically electromagnetic technology. At issue here is how art's materiality might be transformed when energies are understood as constitutive media.

But beyond the art object, Downey's aesthetics of energy implicates the lived environment as well. Exploring the energetic constitution of our habitable surround is another feature of Downey's aesthetics of energy as I try and articulate it. Beginning in the early-1970s, Downey began to frame his practice through the prism of "invisible architecture." "The thought," he explains when discussing this idea, "is to involve the invisible, while liberating art from the parameters of the Visible Spectrum."<sup>7</sup> The "Visible Spectrum" suggests those frequencies of electromagnetic energy that humans can organically perceive, but Downey was especially interested in those subperceptual frequencies that are nonetheless present and environmentally significant. That is, Downey believed these energies to have as decisive a role in structuring our habitable surround as more conventional architectures. In chapter four, I choose to read this idea against the backdrop of contemporary developments in ecosystem ecology, where scientists were

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<sup>7</sup> Juan Downey, "Invisible Architecture," *On Site: Not Seen And/Or Less Seen Of*, no. 4 (1973); reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 332. For a scholarly analysis of the concept of invisible architecture, see: Julieta González, "From Utopia to Abdication: Juan Downey's Architecture without Architecture," in *Juan Downey: The Invisible Architect*, exh. cat., ed. Valérie Smith, 59-74 (Cambridge and New York: MIT List Visual Arts Center and Bronx Museum of the Arts, 2011). Invisible architecture will be explored in-depth during chapter three.

also affording energies a constitutive role in shaping environments. From this vantage, the invisible architectures of Downey's aesthetics of energy do not appear so far out.

But what of the constitutive role of energies in relation to identities? As we will see, Downey was profoundly concerned with issues of subjectivity and the challenges it poses to representation.<sup>8</sup> If energies help create the world around us, what part do they play in making up us ourselves? It is at this point where the energetic scope of Downey's aesthetics expands to incorporate something like the spiritual energies of being. While this might sound vague, Downey's exploration of this idea happens alongside his experiences with the Indigenous Yanomami of the Orinoco River Valley during the late-1970s.<sup>9</sup> It was at this point Downey's investigations into the constitutive role of energies intersect with, and are transformed by, an Amazonian cosmology. Understanding how energies beyond the material might make up living things—and not just artworks or environments—is also a critical feature of Downey's aesthetics of the energy.

In framing this component of the definition of the aesthetics of energy as the exploration of the medial possibilities of energies in artworks and beyond, I hint at its methodological inspiration. In thinking about how energies mediate at the level of objects, environments, and identities, I have been helped along by recent conversations about “elemental media.” Elemental media describes a shift in orientation within media studies towards environmental forces—like wind, fire, and water—as media themselves; that is, entities which enable the transmission of meaning.<sup>10</sup> While my dissertation does not discuss the “elements” in the originally Greek-

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<sup>8</sup> This idea will be explored more in the literature review and chapter breakdown.

<sup>9</sup> It was during this time that Downey produced a series of videos grouped under the heading of the Amazon Tapes (1976-79), and they are the primary focus of chapter four.

<sup>10</sup> Discussions of the elemental are not limited to media studies. For instance, the elemental has become key to new conversations happening within geography. To read more on this, see: Sasha Engelmann and Derek McCormack, “Elemental Worlds: Specificities, Exposures, Alchemies,” *Progress in Human Geography*, accessed March 18, 2021, <https://journals.sagepub.com/doi/full/10.1177/0309132520987301>.

derived meaning of the term that has come to prominence in certain studies of elemental media, such as the widely-cited John Durham Peters' *The Marvelous Clouds: Towards a Philosophy of Elemental Media* (2015), I do take inspiration from elemental media's general questioning of the limits of media's materiality.<sup>11</sup> If environmental forces can be understood as media, then why not the energies of those environments? Elemental media can be understood as investigating the natural backgrounds from which more legible media objects emerge, and electromagnetism is literally, physically, the background of our natural backgrounds. I believe Downey's aesthetics of energy is especially well positioned to help investigate whatever medial possibilities might reside in energetic forces.

So, when I say Downey's aesthetics of energy attempts to understand *how energies can be channeled in the formation of objects, environments, and identities*, it is this constellation of art, energy, materiality, and media I am trying to evoke. How can energies be made as integral to an artwork as acrylic paint is to certain kinds of painting? What is the constitutive role of energies in the environments around us and how can art disclose this role to us? And how are we ourselves partaking of that energetic constitutiveness? These are some of the questions this component of the aesthetics of energy attempts to answer.

The next component in the aesthetics of energy definition accepts the environmentally-constitutive status of energies, and configures it within concrete historical schema. That is, Downey's aesthetics of energy seeks to understand...

*How, and towards what ends, energies have been positioned as resources in the developments of modernity, de/coloniality, and the geopolitics of the Cold War.* The critical shift

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<sup>11</sup> John Durham Peters, *The Marvelous Clouds: Towards a Philosophy of Elemental Media* (Chicago: The University of Chicago Press, 2015). For a more nuanced take on the cultural specificity of the elemental, see: Yuriko Furuhashi, "Of Dragons and Geoengineering: Rethinking Elemental Media," *Media+Environment* 1.1 (2019), <https://mediaenviron.org/article/10797-of-dragons-and-geoengineering-rethinking-elemental-media>

here is thinking energy as resource. A resource is defined as 1) “a stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organization in order to function effectively;” and 2) “a country's collective means of supporting itself or becoming wealthier, as represented by its reserves of minerals, land, and other natural assets.”<sup>12</sup> In claiming that Downey’s aesthetics of energy turns towards energy as resource, I am suggesting on the one hand he becomes ever more attuned to the ways in which different energy forms become integral to the “effective functioning” of living beings at different scales, from communities to entire ecosystems. In this sense, there is a conventionally ecological and even metabolic connotation to energy as resource that Downey explores.<sup>13</sup> On the other hand, energy as resource interrogates larger, geopolitical relations where material forms of energy are at stake, with a special insistence on the resource-rich environs of Latin America and their targeting within the colonialist and imperialist legacies of Western Europe and the United States. Here, Downey’s art incorporates not just pure energy forms like electromagnetism, but also what I am calling “energetically-rich materials” like minerals.

Another way to think this side of the aesthetics of energy is to say it is concerned with the “down-to-earth” uses of energies by living things and collective entities. Here the constitutiveness of energy familiar to us from the previous component of the aesthetics of energy is newly situated within concrete historical formations and biospheric processes. I suggest Downey is still concerned with how different energies make up the world around us, but these energies—their physical location, their ecological embeddedness, their economic value, and their cultural specificity—are not taken for granted or assumed. Importantly, this still means attending

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<sup>12</sup> *Oxford English Dictionary*, s.v. “resource,” accessed May 21, 2020, <https://www.lexico.com/en/definition/resource>.

<sup>13</sup> In this sense, energy as resource borrows from the medial possibilities of energy I hint at in the previous component of the definition of the aesthetics of energy. The sequence of the chapters and their themes mirror this.



to Downey's use of energies and energetically-rich materials with care and attention. In developing the idea of energy as resource, for example, I look to a series of installations that Downey produced which made use of Chilean nitrate fertilizer.<sup>14</sup> By examining the geologic, geographic, and economic particularities of this product, I suggest it provided Downey a nexus in which to bring together his environmental and historical concerns about the role energies play in our world.

To think more critically about energy as resource, I have turned to decolonial and Indigenous scholars. Decoloniality is a way of thinking that faces up to the historical indissociability between modernity and colonialism, and attempts to redress the epistemological biases of colonialism in the present day. A recent strain of decolonial thought is the critique of extractivism—a methodology that examines the entwining of colonialism, capitalism, and the ecological devastation of colonized regions for economic gain.<sup>15</sup> Indigenous thinkers are especially important to critiques of extractivism because Indigenous ways of thinking land and environment as lively, animate, and relational are diametrically opposed to the colonialist-extractivist view which treats land and environment as nothing but what raw materials can be forcefully wrested from them.<sup>16</sup> I suggest Downey's formulation of energy as resource eventually culminates in a critique of extractivism and a demonstration of solidarity with Amazonian Indigeneity through a careful examination of his *Video Trans Americas* (1973-76)

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<sup>14</sup> Key works here *Make Chile Rich* (1970) and *A Clean New Race* (1970).

<sup>15</sup> Of special importance for my thinking of energy as resource and extractivism is Macarena Gómez-Barris, *The Extractive Zone: Social Ecologies and Decolonial Perspectives* (Durham: Duke University Press, 2017). For a more general overview of decolonial thought, see: Anibal Quijano, "Coloniality and Modernity/Rationality," reprinted in *Cultural Studies* 21, nos. 2-3 (March/May 2007): 169. Originally published as "Colonialidad y Modernidad/Racionalidad," *Perú Indígena*, 13, no. 29: 11–20; and : Catherine E. Walsh and Walter D. Mignolo, *On Decolonality: Concepts, Analytics, Praxis* (Durham: Duke University Press, 2018).

<sup>16</sup> For more on the relation between Indigeneity and critiques of extractivism, see Jaskiran Dhillon's guest edited edition of *Environment and Society* 9, no. 1 (September 2018): Indigenous Resurgence, Decolonization, and Movements for Environmental Justice.

project and Amazon Tapes (1976-79). Here Downey's own thinking about energies is transformed during his time with the Yanomami—a major focus of chapter four.<sup>17</sup>

It is in these ways that Downey's aesthetics of energy is about understanding *how, and towards what ends, energies have been positioned as resources in the developments of modernity, de/coloniality, and the geopolitics of the Cold War*. Broadly said, this component of the definition of the aesthetics of energy concerns the more historically critical uses of energy and how art might be made into a vehicle of those critiques. The idea here is to temper Downey's more cosmic and speculative interests in energy with those concrete energetic relations that have differentially shaped the environments, communities, and histories of Latin America, the United States, and elsewhere.

To conclude this section, I want to reiterate the main claim of this dissertation. It is that Downey's practice can be understood as an aesthetics of energy, and the aesthetics of energy is: *a concerted, multi-media attempt to understand how energies might play a transformative role in the making of art; how they can be channeled in the formation of objects, environments, and identities; and how, and towards what ends, they have been positioned as resources in the developments of modernity, de/coloniality, and the geopolitics of the Cold War*. This means Downey's practice is both about, and developed with help of, energies; it explores the medial possibilities of energies and their constitutive role in art and beyond; and it thinks critically about the environmental and historical specificities of energies as they are utilized as resources. To argue that Downey's practice can be understood as an aesthetics of energy, we must know what

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<sup>17</sup> I make sure to rely on Yanomami voices in developing the links between their thinking of ecology and energy and Downey's own, particularly: Davi Kopenawa and Bruce Albert, *The Falling Sky: Words of a Yanomami Shaman*, trans. Nicholas Elliot and Allison Dundy (Cambridge: Harvard University Press, 2013).

that aesthetics consists of, and that has been the aim of this section. Now, we can learn how this reading differs from the extant literature on the artist's practice.

### Current Downey Literature and the Aesthetics of Energy

Each chapter of this dissertation contains a literature review of the relevant scholarship for that phase of Downey's practice—whether it be his first electronic sculptures (chapter one), his early-70s installations (chapter three), or his later single-channel videotapes (chapter four). This is not because the entire body of Downey literature is too large to engage all at once, but because the thematic variety of his practice appears really only matched by its multi-media expression.<sup>18</sup> From cybernetic systems of communication to Latin American Indigeneity to Baroque painting, Downey dealt with numerous topics during his artistic career and most scholars wrestle with this manifoldness.

The aesthetics of energy accepts the conceptual heterogeneity of Downey's practice, but suggests that underlying it all is a concern with the artistic potentials of energies and concomitant critique of their instrumentalization. In order to better grasp how the aesthetics of energy provides a new perspective and more robust understanding of Downey's work—bringing all of its different facets together—it helps to know the broad strokes of what's been said so far about his practice. That is the objective of this section: to articulate the contours of the current Downey literature and clarify how the aesthetics of energy responds to and builds atop them.

When one looks at all the writing on Downey's practice, there appears to be roughly two versions of the artist that map onto his early and late career respectively. On the early side, from

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<sup>18</sup> To be sure, Downey has received relatively little scholarly attention to date. As far as I can tell, my dissertation will be the first monographic, book-length study of his work. The first ever catalog of his work *Juan Downey: 1940-1994* was published in 2019.

the mid-1960s until the early-1970s, you have the cybernetic Downey; and on the late side, from the early-1970s until his passing in 1993, you have the anthropological (or cultural, or symbolic) Downey. The cybernetic Downey created the electronic sculptures and a series of performances and installations that make generous use of contemporary media technologies, while at the same time writing vividly about the utopian promises of the cybernetic principles of feedback and information circulation.<sup>19</sup> The anthropological Downey arises in response to the political crises enveloping his native Chile in 1973—when the US-backed general Augusto Pinochet overthrew the democratically-elected Allende government—and sees the artist thinking deeply about the cultural relations between the United States, Western Europe, and Latin America.<sup>20</sup> From this point on, single-channel video occupies the lion's share of Downey's production, and he creates some of his most well-known works, like *Video Trans Americas* mentioned earlier. Perhaps unsurprisingly, these videos attract the attention of just as many anthropologists as they do art historians—being concerned with the challenges that culture and subjectivity pose to representation.<sup>21</sup> This is also the more intimate Downey, the one who mediates on his liminal

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<sup>19</sup> The place where this Downey comes through clearest is in his essay "Technology and Beyond." It is there he suggests that "[c]ybernetic technology operating in synchrony with our nervous systems is the alternative life for a disoriented humanity... Ironically, the man-nature chasm can only be closed by technology." Juan Downey, "Technology and Beyond," *Radical Software* 2, no. 5: Video and Environment (Winter, 1973): 2. Notable texts thinking Downey from the cybernetic angle include, Julieta González, "Juan Downey's Communications Utopia," in *Juan Downey, 1940-1993*, Julieta González and Javier Rivero Ramos eds., 467-92 (Mexico City: Ediciones MP, 2019), and Carla Macchiavello, "Vento Caldo: The Body in Juan Downey's Electronic Sculptures," in *Juan Downey: el ojo pensante*, exh. cat., ed. Marilys Belt de Downey, 181-91 (Santiago: Fundación Telefónica, 2010).

<sup>20</sup> From the outset of this phase, Downey describes himself as "a cultural communicant, as an activating aesthetic anthropologist with visual means of expression: video-tape." Juan Downey, "Video Trans Americas," *Radical Software* 2, no. 5: Video and Environment (Winter 1973): 4. Some emblematic texts here are Julieta González, "Notes on Juan Downey's Program for a Fake Anthropology," in *Juan Downey: el ojo pensante*, exh. cat., ed. Marilys Belt de Downey, 201-12 (Santiago: Fundación Telefónica, 2010), and Nicolás Guagnini, "Feedback in the Amazon," *October* 125 (Summer 2008): 96-116.

<sup>21</sup> For the anthropologist's take on Downey, see: Francesco Pellizzi, "Juan Downey and the Yanomami: Travels through America," in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos, 511-25 (Mexico City: Ediciones MP, 2019), and Michael Taussig's "A Lesson in Looking and Laughter: Juan Downey's Amazing Yanomami Video, *The Laughing Alligator*," in *Juan Downey: The Invisible Architect*, exh. cat., ed. Valérie Smith, 41-52 (Cambridge and New York: MIT List Visual Arts Center and Bronx Museum of the Arts, 2011).

position vis-à-vis his adopted country of the United States and his home country of Chile, never feeling quite at place in either.

There aren't many attempts to think these two sides of Downey together in the current literature, and most scholars are content with writing about one or the other. Independent curator and art historian Julieta González (who has written more than most about the artist) does suggest, however, that

We can trace in Downey's life-long investment in the cybernetic rhetoric parallel pathways that connect his heterogeneous bodies of work to the developments in cybernetic thought, from the extensions of man that he explored in his early drawings, the feedback dynamics that informed his electronic sculptures and his video works, his research into the invisible energies that enable modern telecommunications, to the questioning of the Western subject that he undertook with the works produced as a result of his stay with the Yanomami and *The Thinking eye*.<sup>22</sup>

Though it is difficult to find cybernetic themes in a video like *The Laughing Alligator* (1977-79), a hallucinatory exploration of the healing rituals and cosmology of the Yanomami. Even González herself submits in an analysis of the contemporary Amazon tape, *The Abandoned Shabono* (1977-78), that “[f]ollowing his experiences in the Amazon, Downey would never return to [the] techno-utopian proposals” that occupied his earlier career.<sup>23</sup> Here I don't mean to collapse “cybernetic rhetoric” as a guiding theme for Downey's practice with the “techno-utopian proposals” of his late-60s and early-70s creations, but those proposals were explicitly couched in the terms of cybernetics in ways his later videos were not. I suggest the waning presence of “cybernetic rhetoric” in Downey's later practice raises doubts as to whether its conceptual schema provides the best possible means to link the “heterogenous bodies of work”

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<sup>22</sup> González, “Juan Downey's Communications Utopia,” 492.

<sup>23</sup> Julieta González, “Beyond Technology: Juan Downey's Whole Earth,” *Afterall: A Journal of Art, Context and Enquiry*, no. 37 (Autumn/Winter 2014): 27.

he developed.<sup>24</sup> This is where the aesthetics of energy comes in as a novel way of thinking together the variety Downey's art contains.

If there is one constant here, it is Downey's fascination with energies, and electromagnetism especially. Before Downey ever turned towards three-dimensional art, he was drawing up plans in the mid-1960s for sculptures that would transmit energies between themselves.<sup>25</sup> His theory of invisible architecture mentioned earlier contoured many of his early-1970s installations, performances, and unrealized architectural plans and possessed an explicitly energetic dimension. Even his ecologically-oriented works bear traces of a concern with metabolic energies. Downey's *Video Trans Americas* and *Amazon Tapes* are filled with images of the sun and shimmering surfaces that are easily read through an energetic lens. Indeed, Downey's interest in video writ large speaks to an energetic affiliation, given the medium's technical connection to electromagnetism. If as to state this for himself, three years before his passing, Downey published in English for the first time what could be thought of as a late-career manifesto titled "The Smell of Turpentine" where energy and video were united.<sup>26</sup> It is there he describes his relation to video in electromagnetic terms, likening his attraction to the medium to the way electrons are literally drawn to the surface of the video screen in the creation of the

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<sup>24</sup> There are other reasons to question whether cybernetics is best suited to understanding Downey's practice that I unfold throughout the dissertation. A primary one for chapter one and two is Downey's interest in the materialities of energy forms. I contend that such an interest is at odds with the dematerializing and disembodiment logic of cybernetics' informational paradigm, where information is believed to operate over and above its material channels of circulation.

<sup>25</sup> Here I am thinking of the 1966 drawing *Comunicación entre tres cuerpos: magnetismo, célula fotoeléctrica, sonido* (Communication Between Three Bodies: Magnetism, Photocells, Sound).

<sup>26</sup> The essay's first publication came in *Juan Downey: VIDEO PORQUE Te Ve* (Santiago de Chile: Ediciones Visuala Galería, 1985). This initial version was translated into English and republished as Juan Downey, "The Smell of Turpentine," in *Juan Downey: 1940-1993*, eds. Julieta González and Javier Rivero Ramos, 431-32 (Mexico City: Ediciones MP, 2019). In 1990, Downey expanded an English version of "The Smell of Turpentine" and published it in *Illuminating Video: An Essential Guide to Video Art*. The full citation is as follows: Juan Downey, "The Smell of Turpentine," in *Illuminating Video: An Essential Guide to Video Art*, Doug Hall and Sally Jo Fifer, eds., 343-47 (New York and San Francisco: The Aperture Foundation and Bay Area Video Coalition, 1990).

image.<sup>27</sup> This is by no means an exhaustive recounting of Downey's thinking art and energies together, but I believe it hints at an enduring interest for the artist between his earliest works and latest. The culmination of this interest I describe as Downey's aesthetics of energy.

And while there are major differences between the current Downey literature and my aesthetics of energy interpretation, this does not mean there is zero interaction between the two. Take the following example. A hallmark of Downey's practice from whatever vantage is what I call a commitment to a critical unknowability.<sup>28</sup> By this I mean, Downey was profoundly interested in harnessing art to explore the unknown. Indeed, he even framed aesthetic experience as "enjoying the unthinkable" and plainly stated that "it is the nature of art to bring us to grips with the yet undefined."<sup>29</sup> This commitment to a critical unknowability finds its most potent materialization in Downey's *Video Trans Americas* and *Amazon Tapes*, where he stages Latin American subjectivity's resistance to the colonial forms of knowing inherited by anthropology. This is effectively the cultural reading offered by the art historians and anthropologists above. I willingly accept that critical unknowability is a central feature of Downey's practice, though I suggest that even it has an energetic component. Or, more specifically, I argue that Downey was interested in the force of electromagnetism because of its potential to generate strange and unforeseen connections between different entities, basically its own version of unknowability—a point I back up by looking to the history of quantum mechanics. Electromagnetism is in that way

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<sup>27</sup> This electromagnetic metaphor as I describe it is a critical component of chapter five and it again relies on the technical connection between video and electromagnetism developed by media archaeology.

<sup>28</sup> Throughout the dissertation, I explore Downey's commitment to a critical unknowability in my own way through the help of the Object-Oriented Ontologies of Graham Harman and Timothy Morton. I contend there is a striking—though, admittedly, historically unconnected—affinity between Downey's vision of art and their own.

<sup>29</sup> Juan Downey, "Travelogues of *Video Trans Americas*," originally published in *Radical Software* 2, no. 5: Video and Environment (Winter 1973), and reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 324; Juan Downey, "Architecture, Video, Telepathy: A Communications Utopia," originally published in *Journal of the Center for Advanced TV Studies* 5, no. 1 (1977), reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 344.

a kind of energetic corollary to the conceptual schema of critical unknowability, and I develop this connection throughout the dissertation.

It is in these ways that the aesthetics of energy both departs from but also incorporates the insights of the current literature on Downey's practice in offering a new, more robust interpretative frame. And now, we can move on to how each chapter of this dissertation develops that frame.

### Chapter Outline

This dissertation unfolds its main argument—that Downey's art can be understood as an aesthetics of energy: a concerted, multi-media attempt to understand how energies might play a transformative role in the making of art; how they can be channeled in the formation of objects, environments, and identities; and how, and towards what ends, they have been positioned as resources in the developments of modernity, de/coloniality, and the geopolitics of the Cold War—across five chapters that are both chronologically and thematically configured. They detail the emergence and consequent transformations of Downey's aesthetics of energy, building atop one another to trace the arc of his practice as seen through its commitment to the artistic potentials of electromagnetism and other energy forms.

The first chapter is somewhat an exception in relation to the others, though it serves a critical function. Less about Downey's practice in the way the following chapters are, chapter one—"Lines of Force, Lines of Descent"—sets the historical and terminological stage of the dissertation. It does so in the form of a genealogy organized around the following question: What kinds of scientific, artistic, and broader social transformations needed to take place to make it conceivable for an artist in the mid-1960s to turn towards electromagnetism as a material for the



making of art? Put another way: What are the different conditions of possibility for an aesthetics of energy like Downey's?<sup>30</sup> To answer this question, I look to the history of physics from the mid-nineteenth century when electromagnetism was experimentally discovered onward to the advent of quantum mechanics in the early-twentieth century; the different figurations of energy within the modernist art of that latter period, as well as how its new telecommunications media provided artists with different means to aesthetically harness energies; and finally, I conclude the chapter in the postwar era by exploring how electromagnetism's materiality was destructively revealed via the dropping of the atomic bombs, and subsequently concealed by the informational logic of the cybernetic paradigm. The objective of this chapter is to bring together insights from physics, art history, and media studies to provide the reader with the events, ideas, and terms that make the fullest account of Downey's aesthetics of energy possible.

Chapter two—"Sculpture in the Electromagnetic Field"—picks up where the genealogy of chapter one concludes: the late-1960s, height of the information age, and the very beginning of Downey's concrete work with electromagnetic energy. It was from 1967 until 1969 that Downey produced a series of electronically-operated sculptures that would detect and make perceivable their invisible electromagnetic environments through light or sound or kinetic movement.<sup>31</sup> These sculptures would effectively reveal and transform the surrounding presence

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<sup>30</sup> This chapter draws its genealogical inspiration from two separate texts: Yuriko Furuhashi, *Climatic Media: Transpacific Experiments in Atmospheric Control* (Durham: Duke University Press, 2022); and Cara New Dagget, *The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work* (Durham and London: Duke University Press, 2019). Both are genealogical in their methodology, but attend to different histories. Furuhashi's text helps in thinking through the expanded materiality of what has been called "elemental media," which fits well Downey's use of electromagnetism. And Dagget's text, while dealing with thermodynamic energy rather than electromagnetic, helps by delineating between the different figurations of an energy form—the way it is represented or put to use in different social, scientific, and technical spheres. I follow her lead in chapter one by exploring the different figurations of electromagnetism across physics and art, for example.

<sup>31</sup> The most comprehensive account of Downey's electronic sculptures is: Juan Downey, "Electronically Operated Audio-Kinetic Sculptures, 1968," *Leonardo* 2, no. 4 (October, 1969): 403-06. It details Downey's reasons for making the sculptures and gives insight into how they work. This text is cited repeatedly in the second chapter and is a major resource for thinking Downey's early practice.

of, for example, radar waves generated by passing aircraft or even the atomic disintegration caused by cosmic rays. While the current art historical literature reads these sculptures as embodying the cybernetic principals of feedback and the circulation of information, I suggest—taking a cue from recent work in the energy humanities—that paying careful attention to the material-energetic reality of the sculptures leads in a different direction. This chapter’s claim is that these works conjure the electromagnetic field with various sensors, receivers, and transmitters to demonstrate how even the most advanced technical media of the information age fail to fully exhaust its possibilities, all the while they are animated by its force.<sup>32</sup>

In departing from the usual cybernetic reading of Downey’s electronic sculptures, and focusing on their explorations of an elusive energetic environment, I offer an alternative interpretation that takes the first steps in articulating Downey’s aesthetics of energy. I use this interpretative shift to also put Downey’s practice into conversation with North American conceptual artists who—across different media—were thinking about the artistic possibilities of various energy forms as well.<sup>33</sup> The idea being, once attention is paid to the concrete deployments of energies in 1960s media and conceptual arts, a new historical throughline emerges. Instead of the totalizing logic of cybernetic communication and its techniques and technologies of control, an electromagnetic underside to the information age is revealed and its potentials explored.

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<sup>32</sup> To develop this argument, I look towards the Object-Oriented Ontology (OOO) of Graham Harman, the speculative realist philosopher. More specifically, the OOO concept of withdraw—how the full reality of a thing recedes from different modes of access—is instructive in thinking about how Downey’s sculptures frame the energy of electromagnetism vis-à-vis the information age historical milieu.

<sup>33</sup> Here I put Downey’s media art practice into conversation with the discourse on dematerialization and the work of Art & Language and Robert Barry. The commonality between them being their turning towards energy to interrogate art’s materiality. James Nisbet’s *Ecologies, Environments, and Energy Systems of the Art of the 1960s and 1970s* is especially important to this portion of the chapter.

The third chapter—“Invisible Architectures and Electromagnetic Ecologies”—picks up chronologically where the second chapter left off and takes on a major shift in Downey’s practice. It was during the early-1970s that Downey begins to express his aesthetics of energy more fully through video installation and performance, rather than sculpture. The objective of this chapter is to both articulate how and account for why. Here I suggest that Downey begins to think of electromagnetism as an ecological media: not just the elusive force familiar to us from chapter two, but also a profoundly intimate “in-between” allowing for unexpected connections between all manner of entities. This claim is grounded through a detailed analysis of Downey’s landmark performance installation *Plato Now* (1973)—a darkened space where closed-eye meditators equipped with neuronal sensors were expected to commune with the shadows of spectators as they watched video feeds from the exhibition space itself. I suggest Downey regarded the invisible force of electromagnetism as the means by which this performance and installation unfolded, facilitating the unseen relations amongst all the different human and other-than-human agents involved.

What makes Downey’s energetic-ecological turn significant in context are the contemporary transformations across cybernetics and cognitive science that began thinking the mind, thought, and sensation in more materially-grounded and environmentally-enmeshed ways. It is important to mention that Downey’s *Plato Now* was figured as a restaging of Plato’s Allegory of the Cave, and sought to make its own claims as to the nature of cognition and perception. My analysis of *Plato Now* takes into account these philosophic coordinates, and reads Downey’s vision alongside the theories of Gregory Bateson and Humberto Maturana and Francisco Varela to articulate what kind of dialog existed between the artist’s energetic-

ecological turn and the developments of his theoretical milieu.<sup>34</sup> While Downey incorporates the heterogenous assemblages of Bateson's ecology of mind, and the significance of internal neural complexity fleshed out by Maturana and Varela's biology of cognition, he goes his own way so to speak. I suggest that Downey provides us a kind of speculative media ecology, one powered by real electromagnetic relations that can open to unanticipated effects—even telepathic ones.<sup>35</sup>

Chapter four— “The Forest's Own Energy Flow”—follows Downey's mid- and late-1970s work and can be thought as simultaneously grounding and expanding the scope of his aesthetics of energy. This chapter engages some of Downey's most well-known works: the series of single-channel videos he taped while first traveling from New York City to the southern tip of Latin America (*Video Trans Americas*, 1973-76), and then while he spent seven months living with a community of the Indigenous Yanomami of Venezuela's Orinoco River Valley (the Amazon Tapes, 1976-1979). While these videos have been almost exclusively read as critiques of anthropology's Eurocentric foundations through foregrounding the challenges Latin American subjectivity poses to representation, this chapter poses an alternative reading that brings *Video Trans Americas* and the Amazon Tapes into the scope of Downey's aesthetics of energy. I agree that there is a deep cultural angle to these videos, but I suggest that one cannot read their depictions of human life in isolation from their depictions of the Latin American environment, which has gone relatively unremarked in the present art historical literature. This chapter's

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<sup>34</sup> Of particular interest here is Gregory Bateson, *Steps to an Ecology of Mind: Collected Essays in Psychiatry, Anthropology, Evolution, and Epistemology* (Northvale, NJ: J. Aronson Inc., 1972); and Humberto Maturana and Francisco Varela, *The Tree of Knowledge: The Biological Roots of Human Understanding* (Boulder: Shambhala Publications, 1992).

<sup>35</sup> Downey's interest in telepathy is seriously considered in this chapter and articulated with the help of ecological philosopher Timothy Morton, who similarly regards art and aesthetic experience as possessing telepathic aspects. Bringing Downey again into conversation OOO philosophers is meant to enrich the speculative possibilities of his practice. The key texts of Morton for chapter three are Timothy Morton, *Dark Ecology: For a Logic for Future Coexistence* (New York: Columbia University Press, 2016), and Timothy Morton, *Humankind: Solidarity with Nonhuman People* (London: Verso Books, 2017).

contribution to the study of these videos is giving careful attention to the way Downey frames the lakes, rivers, plant-life, mountains, and jungles within them, suggesting that the artist's cultural critique is indissociable from an ecological critique.

In order to articulate the ecological critique of these videos, I turn towards a key element of the dissertation's main claim, that within Downey's aesthetics of energy is a thinking through the idea of energy as resource. The concept of energy as resource is a shift of concern within Downey's practice towards the "down-to-earth" uses of energy by living things and collective entities like ecosystems, communities, states, and corporations. As mentioned earlier, energy as resource is not just about how organisms require solar or metabolic energy to sustain themselves amidst their surroundings, but also how other energy forms and energetically-rich materials like minerals are made into commodities and extracted from the planet.<sup>36</sup> In this chapter, I begin by articulating the origins of Downey's concern with energy as resource in a series of early-1970s installations focused on plant-life and their links with then-ongoing developments in ecosystem ecology. From there, I tease out the ways in which energy as resource manifests itself in the visual record of Downey's *Video Trans Americas* and the Amazon Tapes. The Amazon Tapes are of special note because through them, I claim, Downey's idea of energy as resource is confronted with and transformed by the Amazonian ecological worldview of the Yanomami. Through a careful analysis of Downey's videos alongside the cosmology of the Yanomami, I argue that his aesthetics of energy begins to make space for not just the material energetic resources of the Amazon, but its spiritual energies as well. At base, this chapter argues that

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<sup>36</sup> This is a markedly different conception of energy than those more speculative concerns broached in chapter three, though there are important points of contact between the two. Critically, electromagnetic energy remains crucial to Downey's thinking through of energy as resource—from its implication in the very video technology he was using to its literal presence within the environmental energy flows of his installations, and its surprising affinity with the various images of light and luminosity contained within Yanomami cosmology. Clarifying the multiple dimensions electromagnetism is operating at during this time in Downey's practice is one aim of this chapter.

Downey's concept of energy as resource culminates in a demonstration of solidarity with Amazonian Indigeneity and a substantial critique of the logics of extraction.

The final chapter—"The Radiant Unknown"—continues chronologically along the path of Downey's career, through the late-1970s and into 1980s, but its thematic shift is quite striking. After his time in the Amazon, Downey turns his camera towards the visuality of Baroque Western Europe, with a special focus on Spain and the paintings of Diego Velázquez. It was then Downey produced a series of drawings, performances, video installations, and single-channel videos tapes generally organized around the themes of representation, illusionism, reflectivity, and the culture of the Baroque. This chapter begins with the admission that amongst all of Downey's art, these later works are perhaps the most difficult to configure within the framework of the aesthetics of energy. Nonetheless, I contend that at this late stage of his career, Downey's commitment to the aesthetic potentials of energy, and electromagnetism in particular, is as strong as it always has been, though articulated here in more subtle ways. To ground this claim, I choose to look in an unlikely place; not Downey's single-channel tapes or video installations—which by their electromagnetic nature meet some basic criteria of the aesthetics of energy—but his drawings. The aim of this final chapter is to uncover traces of Downey's aesthetics of energy even where they might appear most thematically and medially distant, thereby attesting to the persistence and transformability of the framework I have been suggesting as a new way of understanding the artist's practice.

The drawings of this period all participate in Downey's investigations of Baroque visuality; many are studies and diagrams of Velázquez paintings, and some were even preparatory sketches for material that would make its way into Downey's contemporary single-channel and installation video work on the same themes. What I focus on in this chapter

especially is a striated swirl motif that organizes these drawings—their figures and spaces all emerge from a precisely-lined spiral, sometimes varying in density and color, that terminates in the center of the image. I claim this spiral striation is a graphic representation of the radiant energies Downey found within these Baroque works. I ground this connection to radiant energies via an earlier project of Downey's done during his time in the Amazon where he would draw spirals as a meditative practice intent on picturing an internal white light; some of the first attempts to picture the electromagnetic field made by Michael Faraday, which have a striking visuality similarity to Downey's motif; and the use of lines to represent light throughout the history of art. Once Downey's spiral striation is situated within these contexts, its link to the visualization of electromagnetism becomes clear and the innovativeness of these later works is revealed. During this advanced stage of his career, I suggest Downey brings an electromagnetic orientation to media and themes one might least expect. It is in this way that his enduring commitment to the aesthetics of energy reasserts itself in a novel way.

Tracing the various transformations of Downey's aesthetics of energy is what these chapters seek to accomplish. How does his working through the artistic potentials of energies change over time and what different historical pressures does it respond to? Moreover, what present-day challenges does it prefigure or help us see in a new light? By reading Downey's practice as an aesthetics of energy, I hope to not only articulate his contributions to the art of his own time, but to identify how he might help us better understand our own moment—where the harnessing of energies, aesthetic or otherwise, cannot be taken for granted.

## Chapter 1 – Lines of Force, Lines of Descent

### Introduction

This chapter traces the historical evolution of electromagnetic energy as both a concept and a force from its experimental discovery in the early-nineteenth century to its presence within United States, postwar cybernetic research programs. In that time—over one hundred years—scientists, mathematicians, artists, and engineers came into contact with electromagnetic energy in ways directly relevant to this dissertation. To reiterate its main claim: Juan Downey’s practice is an aesthetics of energy, a concerted, multi-media attempt to understand how energies might play a transformative role in the making of art; how they can be channeled in the formation of objects, environments, and identities; and how, and towards what ends, they have been positioned as a resource in the developments of modernity, de/coloniality, and the geopolitics of the Cold War. Treating Downey’s practice this way allows one to see anew energies’ implication within the *longue durée* of contemporary art, and the artist’s unique contributions to an aesthetics of energy as a viable art historical category and site of future investigation. The first step in this process must be the genealogical excavation of the energy Downey turned to most—electromagnetism. This dissertation starts from the assumption that the richest possible art historical account of Downey’s practice—attempted in each subsequent chapter—first requires a suitable knowledge of the histories, terms, and implications tangled together by the discovery and gradual utilization of electromagnetic energy throughout Western modernity and into the second-half of the twentieth century. This knowledge crisscrosses the domains of science and technology, art, and the broader social imaginaries of the nineteenth and twentieth centuries.

This chapter specifies electromagnetic energy because of how central it is to all of Downey’s work, but most notably starting from 1967 onward when he began to expand his



practice beyond two-dimensional media. His first electronic sculptures of that same year were animated by electromagnetic energy as they electronically sensed their surroundings and generated environmental effects, like light and sound; his dance performances used infrared lasers to create human-electromagnetic choreographies; a 1973 installation of his used electromagnetic technology to sense the brainwaves of its participants; and finally, every one of Downey's videos—whether exhibited in multi-channel or single-screen format—are literally turned on by electromagnetic energy. These may appear as technical points, and the case could be made that electromagnetism is at the heart of so much media art in such a ubiquitous way as to be unremarkable.

However, treating electromagnetism as a basic power source for this or that media apparatus elides Downey's own complex commitment to the force. For him, electromagnetism is a "radiant nature... commonly shared by thoughts, artificial intelligence, video, and it accounts for the life itself of the universe we inhabit."<sup>1</sup> This is not just a claim about the cosmic pervasiveness of electromagnetism, but a recognition of its ability to provide common energetic ground for a whole host of seemingly distinct entities. For Downey, electromagnetism entangles the interior space of the mind with the technical advances of his day, and the mind-bending exteriority of the universe. In a way, electromagnetism for Downey simply *is* a basic power source, but in being so, and with careful attention to it, it becomes much more. It becomes the subject, media, and medium for his practice. Many of Downey's artworks attempt to materialize and make experienceable these ideas, and do so quite literally through electromagnetic means. All of this is to say, to understand those works, the aesthetics of energy they constitute, and why

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<sup>1</sup> Juan Downey, "Architecture, Video, Telepathy: A Communications Utopia," originally published in *Journal of the Center for Advanced TV Studies* 5, no. 1 (1977), reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 343.

they're worth exploring now, one needs to first understand electromagnetism. That is the aim of this chapter.

Phrasing this aim as a question would mean to ask: What kinds of theoretical, technoscientific, artistic, and social developments needed to happen to make it conceivable for artists in the 1960s to use electromagnetic energy as a subject, media, and medium in their artworks? Put another way, what are the conditions of possibility for an aesthetics of energy like Downey's? The answer to this question unfolds in four sections. The first concerns methodology, it highlights the texts which helped give this chapter its logic, structure, and tone. The second section begins the genealogy in earnest, detailing the emergence of electromagnetism as an entity within physics, the discovery of which fundamentally altered the physical imaginary.

Electromagnetism's figuration as a field—a disembodied and boundless force—upended generations of classical assumptions about the inertness of space, and the body-in-motion's privilege as the sole bearer of energetic affect. Electromagnetism's most potent theoretical contribution may be its introduction of the concept of the field, and section two unfolds the field's implication for both physics and Downey's aesthetics of energy. The third section turns its attention away from electromagnetism as it was figured by physicists and towards the ways in which early-twentieth century modernist artists tried to represent and present energy across a range of different aesthetic strategies. Included in this section are examples from figural and abstract painting, as well as an early instance of an artist harnessing energy more directly through the technical media of his time in a way that critically prefigures the energetic aesthetics of the postwar period. A major theme of this section is how certain advances in electromagnetic technologies, like telecommunications, contour artists' approaches to energy. The final section details important historical transformations in the North American understanding of energy

precipitated by the use of atomic weaponry at the close of the second World War, and the development of cybernetic theories of control and communication shortly thereafter. This section narrates how—and with what implications—electromagnetic energy went from a force of catastrophic and spectacular material destruction, to an entity whose material specificity was dissolved within the cybernetic concept of “information.” At stake here are the ways in which Cold War technologies and techniques shaped not just the North American technoscientific imaginary, but the media art that would arise from this historical moment, and the place of electromagnetic energy within it. This section attempts to recuperate a more materially-situated rendering of electromagnetic energy at precisely the time it appears swallowed up by the cybernetic apparatus. Each section contributes to setting the historical stage—and supplying the requisite terms and concepts—needed for a more detailed exploration of Downey’s work to begin in chapter two, and continue throughout the dissertation.

### The Makings of a Genealogy

Before beginning the genealogy in earnest, it is important to signal the two major methodological inspirations for the present chapter: “The Fog Medium: Visualizing and Engineering the Atmosphere” (2019) by media studies and East Asian studies scholar Yuriko Furuhata; and *The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work* (2019) by political science scholar Cara New Daggett. Both texts in different ways offer a framework for how to understand and trace the conditions of possibility for a given historical phenomena—in Furuhata’s case, the development of a media art practice with a similarly diffuse medium as Downey’s during the same historical moment; and in Daggett’s case, the long rise of a particular “energy logic,” albeit one different from electromagnetism. Both texts are genealogical in nature,

but disciplinarily distinct, and offer a mix of resources for thinking the aims of the present chapter, and the larger conversations in which this dissertation participates.

Dealing with the fog sculptures of Japanese artist Nakaya Fujiko, Furuhata poses a structurally similar, genealogical question to that posed in the introduction, though its topic is different: What conditions must have been met to make *fog* a viable medium for art? Furuhata includes geopolitical, scientific, and technological lines of descent, alongside the developments of expanded cinema and the environmental art of the 1970s in excavating an answer. The present chapter emulates this strategy by tying together insights from the history of physics, modernist as well as media art history, and Cold War technoscience. Furthermore, Furuhata claims that Nakaya “participates in what Peter Sloterdijk has called the process of ‘atmospheric-explication’—a process that transforms the taken-for-granted givenness of the environment into an explicit object of manipulation—but also links the history of art to the history of science and technology.”<sup>2</sup> Downey too, in working with a distinctly environmental force like the electromagnetic field, could be read through Sloterdijk’s terms. The fact both artists were working with forces that found themselves part of military experimentation—something Furuhata is keen to excavate in her essay—is yet another important resonance. Finally, Furuhata’s “Fog Medium” expands the traditional understanding of media through a historically- and geopolitically-specific case study oriented around an “object” bearing little resemblance to the usually discrete forms or apparatuses found within conventional media studies, not to mention the more or less bounded objects of art history.

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<sup>2</sup> Yuriko Furuhata, “The Fog Medium: Visualizing and Engineering the Atmosphere,” in *Screen Genealogies: From Optical Device to Environmental Media*, eds. Craig Buckley, Rüdiger Campe, and Francesco Casetti (Amsterdam: Amsterdam University Press, 2019), 188; see also Yuriko Furuhata, *Climatic Media: Transpacific Experiments in Atmospheric Control* (Durham: Duke University Press, 2022). For more on the idea of “atmospheric-explication” see Peter Sloterdijk, *Terror from the Air*, trans. Amy Patton and Steve Corcoran (Cambridge: MIT Press, 2009).

In doing so, Furuata participates in the recent environmental or atmospheric turn within media studies, and this dissertation seeks to follow in those footsteps. Characteristic of this environmental turn are two related acknowledgements. The first: certain, networked electronic media are so distributed within the habitable surround, and so deeply embedded within social space, they exist at a scale and produce effects coincident with what we understand as natural environments; the second, the material and energetic phenomena of seemingly natural environments—like fog or fire for instance—are media in themselves, “in-betweens” that help in the generation and communication of primarily non-linguistic meaning.<sup>3</sup> Electromagnetism activates those increasingly environmental forms of electronic media, is endlessly sensed by them, and shapes the material-energetic elements of the terrestrial environment itself. Indeed, the electromagnetic field enfolding our planet is the terrestrial atmosphere’s condition of possibility.<sup>4</sup> Any analysis seeking to treat that atmosphere in medial terms must acknowledge this physical fact of nature. As this chapter and dissertation move forward, it will gradually become clear how Downey’s aesthetics of energy can contribute to this environmental turn, and even mark out where it may be productively folded into art history.

What Nakaya Fujiko’s Fog and Downey’s electromagnetism share is a lack of density similar to all environmental phenomena such that both be understood as *media at the threshold of materiality*. The electromagnetic field captures this description especially well since it is the

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<sup>3</sup> An earlier essay by Furuata, “Architecture as Atmospheric Media: Tange Lab and Cybernetics,” in *Media Theory in Japan*, ed. Marc Steinberg (Durham and London: Duke University Press, 2017) sums up this turn well within its first few pages (52-53). There she cites media theorists John Durham Peters’ *The Marvelous Clouds: Towards a Philosophy of Elemental Media* (Chicago: The University of Chicago Press, 2015), as well as Mark B. N. Hansen’s *Feed-Forward: On the Future of Twenty-First Century Media* (Chicago: The University of Chicago Press, 2015). Both thinkers have contributed to the environmental or atmospheric turn within media studies, and, as Furuata points out, though their “theoretical premises are different, they share a common ground: to rethink media as atmospheric, as an immediate given.” Furuata, “Architecture as Atmospheric Media,” 53.

<sup>4</sup> Without the electromagnetic envelope currently covering the planet—a result of the magnetic core of the planet—our atmosphere would be wiped away by solar radiation, and Earth would look much like Mars. Which is to say, it simply would not be able to host anything resembling our present biosphere.

fuzzy-edged border where matter condenses from energy. Remarkably, it's been shown to exhibit both particle (matter) and wave (energy) properties, something which will be discussed later. Challenges to thinking the materiality of electromagnetic energy will be addressed throughout this chapter, and they are a main concern for Downey who positioned the force as one of his primary media. Furuhashi's essay demonstrates the possibility of configuring these challenges within contemporary debates surrounding the nature of media, as well as offering a model for how they might be treated with historical specificity across several domains of knowledge production.

Cara New Daggett's *The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work* has also helped in thinking through how the objectives of this chapter might be articulated. Importantly, Daggett is concerned with the rise of thermodynamic energy "at the moment when a handful of deep historical things collided: fossil fuels, steam engines, global capitalism, human terraforming, the slave trade, climate systems, empires."<sup>5</sup> Conversely, electromagnetism proposes an "energy logic" at odds with thermodynamics and the various conceptual schema attached to it—something I will discuss below.<sup>6</sup> Moreover, electromagnetism is historically bound up with slightly different set of events, technologies, and power structures. To be sure, it is deeply implicated in the rise of global capital, especially if we consider how electromagnetism is the basic power source of the information technologies and infrastructures that supercharged global capital later in the twentieth century—though this development exists just outside this chapter's historical bounds. Also, as a political scientist, Daggett does not spend

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<sup>5</sup> Cara New Daggett, *The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work* (Durham and London: Duke University Press, 2019), 16.

<sup>6</sup> Daggett elaborates on the thermodynamic schema in the following way: "As a Western concept, [thermodynamic] energy combines a materialism, in the description of activity, with moralism, expressing a bias toward dynamism over stasis" which was then imported as a governing theme within the British Empire, as well as their educational campaigns in their various colonies. Ibid. 18.

much time on any thermodynamic aesthetics of energy. What is relevant in Daggett's text for the present chapter is her discussion of the "figuration of energy." She borrows the term from Donna Haraway's work on the "figuration" of biology as a "specific way of engaging with the world," rather than some predetermined and preexisting system.<sup>7</sup> Likewise, Daggett treats thermodynamic energy as "a semiotic trope" rather than some ineffable material force, such that it can be manipulated across discursive domains towards different ends—much in the way, for example, early iterations of biology helped prop up colonial justifications for racial inferiority.<sup>8</sup> Electromagnetism, like biology or thermodynamics, arises in the world as an assemblage of practices, inscriptions, materials, and relations of force. Despite the very real material differences between thermodynamic energy and electromagnetic, this genealogy also widens its scope towards the semiotic dimensions of the field, and what kinds of engagement with the world the figurations of electromagnetism have offered between the time of its discovery in the early nineteenth century to the postwar period of the twentieth.

### Physics Lost in the Field

This first section of the genealogy details the experimental discovery of, and the evolutions in physics entailed by, electromagnetism. The primary objective of this section is to give a detailed account of what electromagnetism is, and how understanding its nature initiated a radical shift in the physical imaginary away from the classical and thermodynamic worldview of Newton. Key to this shift, and the section as a whole, is the concept of the field—the idea that electromagnetism is only ever temporarily concentrated in material bodies, like electric wires

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<sup>7</sup> Ibid. 6. Daggett quotes Donna Haraway and Thyra Goodeve, *How Like a Leaf: An Interview with Donna Haraway* (New York: Routledge, 1999), 26.

<sup>8</sup> Ibid. 6. Here Daggett quotes Donna Haraway, *Modest\_Witness@Second\_Millennium.FemaleMan\_Meets\_OncoMouse: Feminism and Technoscience* (New York: Routledge, 1997), 11.

and magnets, and exists fundamentally as a dynamic force coincident with the medium of space. This section will offer a glimpse into electromagnetic physics' early days, some notable discoveries made possible by the field, and how our understanding of the field was radically altered with the advent of quantum mechanics. The section concludes by drawing out the ways in which the physics of the electromagnetic field can be productively read alongside Downey's aesthetics of energy. What is most important to take from this entire section is the importance of field-thinking: how the electromagnetic field transformed not just the physical imaginary, but how it can act as a support within a media art practice, and become a useful, analytic object in a media art historical study.

Studies of magnetism and electricity had been happening, mostly separate from one another, for hundreds of years before the nineteenth century, but after a series of experiments across Europe in 1820, intuitions were growing that the two forces were irreducibly entwined.<sup>9</sup> The question on the minds of many physicists, or “natural philosophers,” at that time was: What was causing the interactions between electricity and magnetism? Was it the classical effects of bodies in motion that just happened to have electrical and magnetic properties or was it

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<sup>9</sup> In 1820 Danish physicist and chemist Hans Christian Oersted demonstrated with the help of simple experimental set up that an electric current deflects the needle of a compass. Just by passing the compass near a continuous electric current—generated by a primitive battery called the “voltaic pile” invented by Alessandro Volta twenty years earlier—the compass' needle would move in unexpected ways. Compasses had long been known to register cardinal direction in relation to Earth's relatively stable magnetic field, but here was the first tangible proof that electrical currents might interact with magnetic fields, or, at least, magnetically sensitive objects, in important ways. In line with this finding, only a few months later, French mathematician and physicist André-Marie Ampère showed that current carrying wires, when placed close to each other, demonstrated magnetic attraction and repulsion depending on the directionality of the electrical currents. Starting from these findings, Ampère conceived of a classical rendition of electromagnetism adhering to Newtonian physics and its central notion of action at a distance—the same kind of physics that underpinned the development of thermodynamics, and how forces integral (and *exclusive*) to independent bodies within an inert space might affect one another, more evidence of the sway thermodynamics held during this historical moment. Nancy Forbes and Basil Mahon, *Faraday, Maxwell, and the Electromagnetic Field: How Two Men Revolutionized Physics* (Amherst, NY: Prometheus Books, 2019), 11-13; Jim Al-Khalili, “The birth of the electric machines: a commentary on Faraday (1832) 'Experimental researches in electricity,'” *Philosophical Transactions: Mathematical, Physical and Engineering Sciences* 373, no. 2039, Theme issue: Celebrating 350 years of “Philosophical Transactions” (13 April 2015): 2.



something different? In 1831, with the publication of his “Experimental Researches in Electricity,” British experimentalist Michael Faraday answered that question more thoroughly than had since been done. What most earlier experiments had in common was the generation of magnetic effects with active electrical currents. Certain of Faraday’s experiments were so groundbreaking because they reversed these terms—using magnetism to induce electricity.

Take for example an experiment theoretical physicist Jim Al-Khalili describes in 2015 as “to this day familiar in any science classroom in the world.”<sup>10</sup> In it, Faraday took a coil of iron wire wrapped in a thinner though much longer insulated length of copper wire connected to a galvanometer—a device used to measure small electric currents—and then thrust a magnetized bar through the hollow of the coil. Astonishingly, this registered a small electric current on galvanometer in one direction, and a consequent tick in the opposite direction when it was removed. There were no live wires involved, and no immediate contact between electrically sensitive objects and magnetic ones, yet somehow, they were clearly interacting with one another. Faraday completed many other experiments to derive the relation between electricity and magnetism throughout the 1830s and 1840s and articulated the first account of what he called “magneto-electric induction.” This is the force animating all electric generators and electric machines today, though the practical applications of electromagnetism at this time were still nascent.

Just as exciting was Faraday’s intuition that this force—rather than residing within the stable bodies of Newtonian, thermodynamic physics—was actually manifest in their surrounding space. Hence, in 1845 he coined the term “magnetic field.”<sup>11</sup> This notion of the field would have momentous implications for the future of physics and our understanding of electromagnetism,

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<sup>10</sup> Al-Khalili, “the birth of electric machines,” 5.

<sup>11</sup> Forbes and Mahon, “Chronology,” *Faraday, Maxwell, and the Electromagnetic Field*, 12.

though it would take another, more theoretical figuration of electromagnetism for these implications to take root.

Despite being a celebrated experimentalist, Faraday was not a mathematician. His experiments were painstakingly detailed, but he was never able to symbolically formalize the observed interactions. That achievement was left to British mathematician James Clerk Maxwell. His formalization of what he would eventually call the electromagnetic field would lend theoretical support to Faraday's experiments, and initiate a groundbreaking change in the way physicists thought about space and reality.<sup>12</sup> In 1865 Maxwell published "A Dynamical Theory of the Electromagnetic Field," a treatise in which he sought to describe "actions which go on in the surrounding medium well as in the excited bodies, and endeavouring to explain the action between bodies without assuming the existence of forces capable of acting directly at sensible distances."<sup>13</sup> That last part is especially important. Maxwell was attempting the formalization of a physics whose affectivity operated below the threshold of the sensible. This becomes a major theme when thinking about the electromagnetic field from here on out (and in relation to Downey's art). The relative invisibility of the field and its dynamics exerted pressure on a classical physics so reliant on bounded bodies of determinate density. It is as if the introduction of electromagnetism's invisible force charged space itself, animating it to a degree previously

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<sup>12</sup> Importantly, Maxwell's initial formulation of the electromagnetic field was incredibly complex. It used a series of four-part equations called quaternions that could be unfolded into yet even more equations. A reclusive mathematician named Oliver Heaviside, as well as other followers of Maxwell, called "Maxwellians," would work to refine Maxwell's mathematics. Today, when Maxwell's equations are mentioned and used, they're actually the condensed refinements by these other, less known, individuals.

<sup>13</sup> James Clerk Maxwell, "A Dynamical Theory of the Electromagnetic Field," *Philosophical Transactions of the Royal Society of London* 155 (1865): 460. Maxwell continues: "The theory I propose may therefore be called a theory of the Electromagnetic Field, because it has to do with the space in the neighbourhood of the electric or magnetic bodies, and it may be called a Dynamical Theory, because it assumes that in that space there is matter in motion, by which the observed electromagnetic phenomena are produced." The rest of the treatise is filled with exceedingly complex formulas and mathematics the present author is no position to explain adequately. It is hoped the textual descriptions of the electromagnetic field are enough to convey its importance.

reserved for Newtonian, thermodynamically regulated objects.<sup>14</sup> “A Dynamical Theory of the Electromagnetic Field” laid the formal groundwork for understating that electrical charges and magnetic forces were one and the same entity, and though could be concentrated in objects like live wires or magnets, existed fundamentally as fields—that is, as spatial forces without concrete edges.

The implications of this were momentous. In 2015, British physicist Malcom Longair described “A Dynamical Theory of the Electromagnetic Field” as laying “the foundations for the innovations of twentieth century physics by placing fields at the heart of the theory of electromagnetism and of all subsequent fields which describe how matter and radiation behave at a fundamental level.”<sup>15</sup> Biographers of Faraday and Maxwell, Nancy Forbes and Basil Mahon, help contextualize this shift in slightly less technical language, which is worth quoting at length:

The extraordinary idea put forward by Faraday and Maxwell was that space itself acted as a repository of energy and a transmitter of forces: it was home to something that pervades the physical world yet was inexplicable in Newtonian terms—the electromagnetic field...

It is almost impossible to overstate the scale of Faraday and Maxwell’s achievement in bringing the concept of the electromagnetic field into human thought. It united electricity, magnetism, and light into a single, compact theory; changed our way of life by bringing us radio, television, radar, satellite navigation, and mobile phones; inspired Einstein’s special theory of relativity; and introduced the idea of field equations, which became the standard form used by today’s physicists to model what goes on in the vastness of space and inside atoms.<sup>16</sup>

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<sup>14</sup> Mahon and Forbes articulate this point well. In discussing “A Dynamical Theory,” they explain it contained “the seeds of a truly revolutionary idea: some of nature’s workings in the physical world not only do not need a mechanical model, but they cannot be explained in a mechanical way,” such that even though electromagnetic energy gave rise to kinetic effects and momentum, “the momentum was disembodied; it was distributed throughout space.” Mahon and Forbes, *Faraday, Maxwell, and the Electromagnetic Field*, 209.

<sup>15</sup> Malcolm Longair, “...a paper...I hold to be great guns’: a commentary on Maxwell (1865) ‘A dynamical theory of the electromagnetic field,’” *Philosophical Transactions: Mathematical, Physical and Engineering Sciences* 373, no. 2039, Theme issue: Celebrating 350 years of “Philosophical Transactions” (13 April 2015): 2. Longair quotes Albert Einstein, at the centennial of Maxwell’s birth, saying “Since Maxwell’s time, Physical Reality has been thought of as represented by continuous fields, governed by partial differential equations, and not capable of any mechanical interpretation. This change in the conception of Reality is the most profound and the most fruitful that physics has experienced since the time of Newton.”

<sup>16</sup> Forbes and Mahon, *Faraday, Maxwell, and the Electromagnetic Field*, 16-7.

Forbes and Mahon are correct in their assertion that the importance of the discovery and elaboration of the electromagnetic field is not limited to physics by any stretch of the imagination. Like they say, all technical media transmitting or receiving electronic signals are in deep, activating contact with the electromagnetic field. These are some of the same devices that Downey would eventually use in his practice starting in 1967. They can be understood as coming alive within this field, it is their basic condition of operation, and Downey extrapolated from this electromagnetism-as-power-source a fundamental element of his aesthetics of energy.

Before nineteenth century was over, something fundamental about the electromagnetic field itself was discovered. In 1897, what we now know as the electron was detected by another British physicist, J. J. Thomson.<sup>17</sup> The electron was the first subatomic particle to be discovered, and would eventually be woven into the electromagnetic field as its constitutive material. Here is where the relation between energy and matter within the electromagnetic field becomes deeply counterintuitive. Electrons have mass and are considered material, full stop. Yet, their mind-bending smallness, incredible speeds, and complete invisibility to non-technically aided human perception make thinking their materiality near impossible. This difficulty compounds with the fact that waves of electrons, in radio or visible light frequencies for example, are energetic phenomena. Importantly, the wave-form of electromagnetism does not entirely subsume the field's materiality, as independent electrons still persist and can break out as particles under certain circumstances. To make sense of this strange relationship, this genealogy now turns to the development of quantum mechanics during the first few decades of the twentieth century.

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<sup>17</sup> Thomson is historically credited with discovering the electron, but missed a few points in his initial findings. His other scientific commitments at the time, like a belief in the mechanically-oriented ether, inhibited him from the fuller accounts of electrons that would arrive in the next century. For more on this, see Isobel Falconer, "Corpuscles, Electrons, and Cathode Rays: J. J. Thomson and the 'Discovery of the Electron'," *The British Journal for the History of Science* 20, no. 3 (July, 1987): 241-76.

The term *quantum* literally means “a very small quantity of electromagnetic energy,” and quantum mechanics arose with the intent of adequately describing what goes on at the smallest material-energetic scales humans have thus far reached.<sup>18</sup> The first glimpse of quantum smallness came from Max Planck. He was working with German physicists at the turn of the twentieth century in a concerted attempt to produce better materials science for lighting apparatuses with the hopes of competing with other European countries, particularly England. Planck’s research concerned the nature of what physics calls a “blackbody,” an idealized object with a small cavity that perfectly absorbs its surrounding temperature and then emits an even distribution of spectral wavelengths for whatever that temperature might be. Heating this blackbody would then provide spectral distribution for higher temperatures. In effect, the blackbody is a conceptual apparatus used to plot the relationship between certain temperatures and wavelengths of emitted light along the electromagnetic spectrum. In the course of his research, to account for the empirical findings, Planck reasoned that electromagnetic energy could not move to a higher or lower level of intensity in an amount over a discrete limit—a “packet” as he called it, and what would eventually become known as the fundamental quantum of energy: 0.000000000000000000000000006626 ergs per second—a unit measuring energy’s work. This infinitesimally small number became known as Planck’s Constant, and it set the stage for all further developments in quantum mechanics.<sup>19</sup>

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<sup>18</sup> *Oxford English Dictionary*, s.v. “quantum,” accessed May 26, 2020, <https://www.oxfordlearnersdictionaries.com/definition/english/quantum>

<sup>19</sup> Manjit Kumar, *Quantum: Einstein, Bohr, And the Great Debate About the Nature of Reality* (New York and London: W.W. Norton & Company, 2008), 9, 21-27. Kumar’s analysis of Planck’s position in the early days of quantum mechanics is quite enlightening. Actually, Planck believed his little “packets” of discrete energy were simply conceptual tools that helped bear out the experimental findings, eventually to be discarded for a more continuous model of the relationships between intensity of light, heat, and wavelength. Such a model never came, much to Planck’s dismay, and Kumar’s chapter on him is titled “The Reluctant Revolutionary,” 3-29.

What's strange about Planck's constant—and much of quantum mechanics more generally—is the fact that it effectively re-introduces something discrete into a turn-of-the-century physical imaginary only just warming up to the dynamic continuity of the electromagnetic field; and the relationship between discrete particles (matter) and continuous waves (energy) within quantum mechanics is nothing short of paradoxical. However, it is a relation that Downey himself appears to have been aware of and interested in, since on more than one occasion he referred to electromagnetism as a “wave-material.”<sup>20</sup> This curious compound term would be a bold-faced oxymoron in classical physics. Wave properties like interference patterns and frequency are mutually exclusive with particle, or matter, properties like mass and weight.<sup>21</sup> Yet, “wave-material” is precisely what experimental evidence has found within quantum mechanics, and understanding that will go a long way in understanding more fully Downey's aesthetic of energy.

What is first important to understand about quantum mechanics is the role that statistical probability plays within it. When dealing with subatomic particles—until only very recently—it was unthinkable to locate one with the same kind of precision afforded to the objects of classical physics.<sup>22</sup> Therefore, according to famous German quantum theorist Werner Heisenberg, the quantum world is one where “only the probability of a given outcome among a range of

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<sup>20</sup> Downey, “Architecture, Video, Telepathy,” 343; Juan Downey, “Technology and Beyond,” *Radical Software* 2, no. 5: Video and Environment (Winter 1973): 2. See also, Downey, “Architecture, Video, Telepathy,” 34

<sup>21</sup> Frequency is measure of how many waves pass a fixed point in time, and is a general indication of the intensity of a wave—the higher frequency, the more energy contained in the wave, and the lower frequency the lower energy it transmits. An interference pattern is a specific kind of disturbance exclusive to waves. If one were to drop two pebbles into a pond, the point at which their ripples cross is an interference pattern, and depending on their relative frequencies the interference could be constructive—increasing frequency—or destructive—decreasing frequency. Frequency and interference are both spread out, as it were, which is something particles cannot be (or so was thought before certain quantum mechanical experiments) and hence their interactions are discrete.

<sup>22</sup> Advances in scanning tunneling microscopy have enabled scientist to manipulate individual atoms—the first instance of which was performed by researchers at IBM Labs in 1989. They used the technology to spell out their company's logo.

possibilities can be precisely predicted.”<sup>23</sup> A more grounded way of saying this would be: We cannot know the exact position of the electron-as-particle, but we can treat it in energetic terms as a wave, something smeared out in time and space with a probable distribution. When the electron-as-particle is detected its wave-function collapses—the probability of its location is reduced to zero, but only after some kind of experimental intervention.<sup>24</sup> This means that subatomic entities like electrons or photons (the quantum of light theorized by Albert Einstein in 1905) can exhibit both wave and particle behavior, they can exist as energy *and* as matter—a state Downey captures with his “wave-material” description of electromagnetism. What’s more, experimental evidence has confirmed that two or more particles bound together in the same wave—two elements of matter sharing a single register of energy—can become “entangled,” such that they can have effects on one another non-locally and at speeds faster than light.<sup>25</sup>

The discovery of nonlocality has important implications for our understanding of the electromagnetic field, especially in relation to Downey’s aesthetics of energy. This can be made

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<sup>23</sup> Kumar, *Quantum*, 249. Werner Heisenberg, a famous quantum theorist, understood the fundamental role of probability in quantum mechanics as establishing “the final failure of causality.” Quoted from a letter from Wolfgang Pauli to Heisenberg in Jagdish Mehra and Helmut Rechenberg, *The Historical Development of Quantum Theory* 6, Part 1: *The Completion of Quantum Mechanics 1926-1941* (Berlin: Springer, 2000), 146.

<sup>24</sup> Danish Quantum theorist Niels Bohr extrapolated from this experimental evidence the dominant interpretation of quantum mechanics—called the Copenhagen Interpretation—which is as much epistemological and ontological as it is physical. For Bohr, quantum mechanics’ ultimate lesson is that “it was no longer possible to make the separation that existed in classical physics between the observer and the observed, between the equipment used to make a measurement and what was being measured.” Ibid. 244. Karen Barad’s *Meeting the Universe Halfway: The Entanglement of Matter and Meaning* (Durham: Duke University 2007) unfolds Bohr’s insights into a full-scale philosophical framework that brings together quantum theory and the humanities.

<sup>25</sup> Arguments over locality versus non-locality touch on the very foundations of physics—whether or not an object requires some amount of time and space to affect another, or can do so instantaneously and in violation of the speed of light. This debate was central in the development of quantum mechanics and a point of difference between Albert Einstein (who believed in locality) and other quantum theorists like Heisenberg or Niels Bohr who were willing to do away with locality given how well quantum equations had done (and still do) in describing the activity of matter. This debate is narrated in the Kumar text quoted above, especially in chapter three, “Quantum Reality.” The text as a whole is a detailed historical account of the rise of quantum mechanics and has been cited frequently here.

clearer by media art historian Laura U. Marks in her “How Electrons Remember.”<sup>26</sup> Marks focuses on the work of American physicist David Bohm, and explains his belief

that each electron on a given wavelength has the wave function encoded into it. It 'remembers' where it came from, and thus remains linked to other elections sharing the wave even they are physically far distant. This means that the photons of sunlight that warm our faces are physically connected to the star that emitted them, arriving on a common wave.<sup>27</sup>

Bohm elaborates on this idea with the notion of “unfolding” between “implicate” and “explicate” orders. The single electron is implicate within that “common wave” and when it is registered as a particle it “unfolds,” becoming explicate.<sup>28</sup> In terms of quantum entities, unfolding is a traversal between material and energetic states, without losing connection to either. That is, in Bohm’s figuration, the material and energetic dimensions of the electromagnetic field—the times when it appears as matter (particles and the objects composed of them), and the times when it appears as energy (waves or signals)—are different degrees of unfoldedness within a necessarily shared, always-already, material-energetic environment. This is what’s captured in the above image of physical connection between the sun, photons, and the warmth of light on a human face. Marks uses Bohm in the context of more recent, digital media.<sup>29</sup> For Downey, Bohm can help explain how electromagnetism as an artist’s media and medium—even at its most energetic, bound up in, and yet boundless as, a field—still retains a distinct, if mutable, materiality and groundedness.

It’s clear by now discussions of the quantum invite deep abstraction, so it’s important to ask what those insights, and the rest of these figurations of the electromagnetic field mean in

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<sup>26</sup> This is the eleventh chapter, “How Electrons Remember,” of Marks’ *Touch: Sensuous Theory and Multisensory Media* (Minneapolis: University of Minnesota Press, 2002).

<sup>27</sup> Marks, “How Electrons Remember,” 167.

<sup>28</sup> Ibid. 168.

<sup>29</sup> For Marks, Bohm helps make the case for a renewed understanding of indexicality within digital photography, claiming that the electrons flowing along the pathway of light from the photographed object, into the digital camera and across its circuit boards, still retain a material (if highly energetic) connection to their source in a way basically similar to the indexes of analogy photography. This is part of an extended text seeking to introduce notions of “touch” and contact to contemporary art and media theory.



more precise terms for an analysis of Downey's work. This section really turns around the transformations in the physical imaginary initiated by the discovery and elaboration of the electromagnetic field. Since Faraday's earliest experiments, the electromagnetic field made palpable the idea that something material and energetic was going on in the intervening medium of space. This was whether or not its effects were directly sensible to human perception or fundamentally tied to individual bodies as in the *milieu* of Newton's time. Philosopher Georges Canguilhem provides an intellectual history of the term *milieu* as part of his *Knowledge of Life* (1965). In it, he explains that "one can speak of an environment, a milieu," in Newtonian terms only, "because there exist centers of force" with an ontological priority.<sup>30</sup> The discovery of the electromagnetic field radically destabilized this ontology, and more on the field's relation to the concept of the milieu will follow in subsequent chapters.

It suffices to say now that the field makes space materially and energetically lively, and Downey's aesthetics of energy provides manifestations for thinking this in embodied and historically specific ways. Many of his works—like *Against Shadows* (1968)—sought to intervene in and make newly perceivable the electromagnetic environment in which they are immediately located; some—as *With Energy Beyond These Walls* (1969)—revealed energies from afar, with their sensitivity to radio and radar signals; and others operated on even extraterrestrial energies, with his sculptures—like *Radioactive Chair* (1967)—designed to detect cosmic rays. Given the varying scales, frequencies, and modes of perception employed in Downey's aesthetics of energy, understanding the electromagnetic field is critical.

However, what's important to keep in mind about this field's effects on things, and the field as it typically exists, is the condition invisibility. This challenge to the sensible was central

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<sup>30</sup> Georges Canguilhem, *Knowledge of Life* (1965), eds. Paola Marrati and Todd Myers, trans. Stefanos Geroulanos and Daniela Ginsburg (New York: Fordham University Press, 2008), 99-100.

for James Clerk Maxwell when he first formalized the electromagnetic field.<sup>31</sup> Likewise, Downey understood most of his career through the paradigm of “invisible architecture,” which he framed as facilitating the “process of reweaving ourselves into natural energy patterns” so as to engage the world with attention to those features of the built and un-built environment that slip beneath everyday perception. For him, invisible architectures exist microphysically, but have major consequences for, and constantly scale upwards to, the macrophysical world. This is much like the electromagnetic field itself, hence why Downey thinks invisible architectures through electromagnetism: “The invisible architect becomes one with energy and manipulates this wave-material.”<sup>32</sup> I will return in depth to the concept of invisible architecture in chapter 3.

For now, I want to suggest that Downey’s constellating together invisible architecture and electromagnetism as “wave-material” bears out the inclusion of quantum mechanics within this genealogy. That he simultaneously entertained the material and energetic dimensions of the electromagnetic field makes the earlier detour through Laura Marks’ invocation of David Bohm all the more rewarding. Electromagnetism as a “wave-material” is a force whose very nature is the traversal of material and energetic states. Downey’s aesthetics of energy harnesses such traversals, or “unfoldings,” and explores the different technical, biological, and cosmic environments they give rise to and entangle.

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<sup>31</sup> As a reminder, Maxwell characterizes his “Dynamical Theory of the Electromagnetic Field” as an attempt to mathematically model “actions which go on in the surrounding medium well as in the excited bodies, and endeavouring to explain the action between bodies without assuming the existence of forces capable of acting directly at sensible distances.” Maxwell, “A Dynamical Theory of the Electromagnetic Field,” 460.

<sup>32</sup> An article written in 1973, titled “Technology and Beyond,” contains the first known mention of Downey’s “invisible architecture,” portions of which are quoted above. Juan Downey, “Technology and Beyond,” published in *Radical Software: Video and Environment*, vol. II, no. 5 (Winter 1973); reprinted in Juliet González and Javier Rivero Ramos eds., *Juan Downey, 1940-1993* (Mexico City: Ediciones MP, 2019), 321. There are other, distinctly cybernetic, techno-utopian elements to Downey’s characterization of invisible architecture that will become important in later chapters. For now, what is important to notice is he’s speaking through the register of the electromagnetic field. The microphysical dimension of invisible architecture is elaborated well in Julieta González, “From Utopia to Abdication: Juan Downey’s Architecture without Architecture,” in *Juan Downey: The Invisible Architect*, exh. cat., ed. Valérie Smith, 59-74 (Cambridge and New York: MIT List Visual Arts Center and Bronx Museum of the Arts, 2011).

Characterizing Downey's work in this way—and framing it with recourse to all these physics-figurations of the electromagnetic field—raises serious questions about what can count as an artist's material, media, and medium at a pivotal time in contemporary art where those categories were being rigorously interrogated. That Downey is perhaps most known for his work in video, an emblematically electromagnetic technology, makes his connection to the physical history of the electromagnetic field and its terms all the more valuable moving forward. The following chapters will ground these claims in extended engagements with Downey's practice. For now, it's enough to signal how these various physics-figurations of electromagnetism oscillate within his work.

### Art Capturing Energy

This section turns its attention away from electromagnetism as it was figured by the physicists of the nineteenth and twentieth centuries, and towards modernist artists' attempts to figure the force themselves across a range of aesthetic strategies. The difference between representation and presentation of energy is crucial throughout the section. The first artists discussed below used relatively static means, like painting, to capture the activity of electromagnetic energy. Some did so abstractly, and others did so figurally. The section then turns to an early historical example of the inverse: an artist—Raoul Hausmann—who created a machine to transform sound signals into emissions of light, thus presenting energy in a more direct way. Importantly, the gradual shift from representing to presenting energy follows the increased availability of electromagnetically-activated, signal-transmission technologies and rising telecommunications infrastructures. What is at stake in this section are some notable art historical lines of descent, tangling themselves amongst the technical media of their day in the co-creation of a ground from which later

aesthetics of energy might emerge. The section concludes by situating some broad strokes of Downey's own practice within this art and media historical context.

The belief in the electromagnetic field's capacity to fundamentally alter how artists engage with the world might have been supercharged by the deep confluence between art and technology in the 1960s, but the belief itself reaches back half a century at least. There is a complex, historical tradition of modernist, European artists who attempted to figure electromagnetic energy in one way or another, such as Kazimir Malevich, Kliment Redko, František Kupka, Umberto Boccioni and other Italian Futurists, Wassily Kandinsky, and Marcel Duchamp. Some of their ideas help form an initial art historical base from which to proceed.

Art historian Linda Dalrymple Henderson helps in introducing an early-twentieth concern with the representation of energy through what she calls "vibratory modernism."<sup>33</sup> What's unique about vibratory modernism for Henderson is its reliance on the "ether" as a potential subject and inspiration for representation, despite what deep contradictions its representation posed. Interestingly, Henderson's historical moment already witnessed the discovery of the electron and the increasing formalization of the electromagnetic field. Nonetheless, there still remained few widely accepted answers as to what allowed the field's propagation: What was its medium?

Michael Faraday believed the field was composed of warping "lines of force," and required no mechanical medium.<sup>34</sup> These lines of force have a rich visual history tied to Faraday's experiments with magnets and iron shavings—wherein he would sprinkle the shavings

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<sup>33</sup> Henderson unfolds this idea in her "Vibratory Modernism: Boccioni, Kupka, and the Ether of Space," in *From Energy to Information: Representation in Science and Technology, Art, and Literature*, eds. Bruce Clarke and Linda Dalrymple Henderson (Stanford: Stanford University Press, 2002). It will be cited in what follows.

<sup>34</sup> Michael Faraday, "Thoughts on Ray Vibrations: A Letter to Richard Phillips," NASA, accessed June 11, 2020, <https://www-spf.gsfc.nasa.gov/Education/wfarad1846.html>. The title of this chapter, "Lines of Force, Lines of Descent" is a reference to Faraday's intuition.

over pieces of paper placed atop bar magnets. The shavings would then condense into thin, curving lines that traced the contours of the magnetic field surrounding the bars. In effect, the history of attempts to visualize the electromagnetic field begins here, and I contend the graphic motif Faraday indexed even finds its way into Downey's late drawing practice in chapter 5.

However critical Faraday's lines of force will become, the notion was disregarded during his lifetime. Even colleagues of his—like William Thompson (known today as Lord Kelvin), and James Clerk Maxwell—thought the field's energy “could subsist only in the motion and strain of a material medium” that adhered to the more grounded interpretations of mechanical physics.<sup>35</sup> This medium was described as the ether: “the stationary but undulating spatial foundation upon which the mobile contents of radiant energies were propped.”<sup>36</sup> Despite those physical advances that would eventually discount the ether during the early-twentieth century, Henderson notes it “continued to loom large in the public imagination.”<sup>37</sup> Her essay offers a glimpse into how artists, long concerned with the representation of space, gravitated towards this strange, invisible but seemingly no less present medium.

The ether was only a temporary stand in for other, more accurate renderings of the electromagnetic field soon to come in the twentieth-century, but I want to suggest it can still be read amongst figurations of electromagnetism. This is because Henderson's vibratory modernism describes those aesthetic strategies invested in the representation of an energy *field*: “vibratory” describes a state created by nonlocalizable energetic events such as waves, which can only exist in fields contra the discreteness of material particles (quantum mechanics had yet to

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<sup>35</sup> Bruce J. Hunt, “Lines of Force, Swirls of Ether,” in *From Energy to Information: Representation in Science and Technology, Art, and Literature*, eds. Bruce Clarke and Linda Dalrymple Henderson (Stanford: Stanford University Press, 2002), 100.

<sup>36</sup> Bruce Clarke, “From Thermodynamics to Virtuality,” in *From Energy to Information: Representation in Science and Technology, Art, and Literature*, eds. Bruce Clarke and Linda Dalrymple Henderson (Stanford: Stanford University Press, 2002), 21.

<sup>37</sup> Henderson, “Vibratory Modernism,” 126.

problematize this distinction). Thus, Henderson reads many of her essay's case studies as energetically radiant, their colors vibrant and the solidity of their pictorial forms appearing to melt away into light. An example is Umberto Boccioni's *Matter* (1912), the frontispiece of Henderson's essay. For her, it gives painterly form to the artist's belief in "the electric theory of matter, according to which matter is only energy, condensed electricity and existing only as force."<sup>38</sup> The presence of electromagnetic field thinking is strong here, if only approximated by the ether. Henderson identifies steep diagonal planes in Boccioni's painting, striating its central figure, which could be seen as temporary disturbances in the electromagnetic field catalyzed by the presence of more solid matter. The painterly representation of energy, however, was not exclusively conducted through figural means.

A case in point: "Energetic Abstraction: Ostwald, Bogdanov, and Russian Post-Revolutionary Art," by art historian Charlotte Douglas. Douglas frames her historical context by noting that "the study of energetic systems... was a major topic of discussion in Russia during much of the 1920s," and her essay concerns the ways in which early-twentieth century, avant-garde Russian artists shared "an avoidance of depicted objects, objects in [their] view of the world being merely transitory webs of nodules of energy."<sup>39</sup> Douglas notes many of these artists were influenced by physicists, and she quotes German physicist Wilhelm Ostwald as representative among them. Ostwald believed: "Everything that happens in the world... is nothing but a change in energy," and Douglas' essay sketches out a pictorial program focused on

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<sup>38</sup> Ibid. 135. Boccioni's statement is quoted from *Dynamisme plastique: peinture et sculpture futuristes*, ed. Giovanni Lista (Lusanne: L'Age d'Homme, 1975), 35.

<sup>39</sup> Charlotte Douglas, "Energetic Abstraction: Ostwald, Bogdanov, and Russian Post-Revolutionary Art," in *From Energy to Information: Representation in Science and Technology, Art, and Literature*, eds. Bruce Clark and Linda Dalrymple Henderson (Stanford: Stanford University Press, 2002), 76.

non-figural representations of energetic change within the post-revolutionary, Russian context.<sup>40</sup>

It's worth noting briefly, Ostwald's quote has a striking resonance with Boccioni's "electric theory of matter," quoted in Henderson's text. Douglas' artists were abstractionists, but this similarity hints at the pervasiveness of energetic discourse across a major divide in modernist aesthetic strategies—between figuration and abstraction.

Douglas finds a pictorial commitment to abstract energetic change in the use of vividly colored, geometric forms set against expansive, white backgrounds, as in the Suprematist paintings of Malevich; as well as in the sweeping, almost diagrammatic line work—evocative of graphs and vectors—in paintings by Alexandra Exter and Valentin Iustitskii, just to name a few of her examples. It was thought that these strikingly basic forms, and their potential to invoke a sense of movement unburdened by allusions to three-dimensional space within the pictorial field, could approximate energy's ceaseless activity—they could chart its transformations as physicists do. Energetic abstraction, Douglas claims, was motivated by a post-revolutionary Russian politics concerned partly with energy management, as well as the construction of a new aesthetic regime suited to the novelty of the historical moment's technological advancements. Many of these were exploring new uses of electromagnetism, especially in the realm of telecommunications: "The avant-garde of the new era set out to make works of art that suggested the material structure of the unified energetic world."<sup>41</sup> Key to that "material structure" was the technical milieu making it legible.

Henderson and Douglas are both keen to point out the entanglement of early aesthetics of energy with contemporary advances in technical media. The difficulty energy poses to any

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<sup>40</sup> Ibid. 77. Douglas quotes Wilhelm Ostwald, *Elektrochemie: ihre Geschichte und Lehre* (Leipzig: Veit & Comp., 1896) 6, which is quoted from Robert J. Deltete, *The Energetics Controversy in Late Nineteenth Century Germany: Helm Ostwald, and Their Critics*, Ph.D thesis, Yale University, 1983, 598.

<sup>41</sup> Ibid. 94.

artist, either figural painter or abstractionist, is: How does one statically represent that which exceeds such a representation? Electromagnetic energy may be easily glimpsed in the glow of an electric lightbulb or in the sky-brightening flash of lightning, but these are just momentary condensations of an all-present field smeared out across a spectrum of mostly invisible frequencies. Which is to say, so much of electromagnetic energy typically evades detection by technically unaided means. The artists Henderson and Douglas describe find solutions to this problem within the technical milieu of their day, by exploring how new forms of technology might help extend human perception.<sup>42</sup> Importantly, many of these forms were electromagnetic in nature. Henderson's analysis of František Kupka traces how the artist went from thinking about his art—and the function of the artist—in terms of the X-ray as a revealer of hidden truths, to eventually understanding “the artist as an emitter of telepathic waves, on the model of wireless telegraphy.”<sup>43</sup> Likewise, Douglas quotes Kliment Redko saying in a rather sweeping fashion that “ART TODAY is the worldview of radio substance, out of which arises potential—energy in the variety of forms.”<sup>44</sup> In the case of either artist and those like them, it's not so much that their art is fundamentally reducible to some electromagnetic technology. Rather, such technologies—

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<sup>42</sup> The idea that technical media might somehow help reveal an invisible reality beneath human perception was more than a concern of modernist artists, and influenced the modern imaginary more generally. A classic and frequently discussed example in media studies is Étienne-Jules Marey's chronophotographic experiments, which used the quick succession of cameras to create detailed studies of the movements of both human and animal bodies. Mary Ann Doane's chapter “Temporality, Storage, Legibility: Freud, Marey, and the Cinema,” in *The Emergence of Cinematic Time* (Cambridge: Harvard University Press) is instructive here, especially for how it links chronophotography to other modern phenomena like psychoanalysis and cinema—similarly concerned with what realities might be hidden under appearances.

<sup>43</sup> Henderson wrote earlier on the effect the X-ray had on modernists, Kupka included. “The extrasensory reality revealed by X-rays pointed to the most important lesson to be drawn from [discoverer of the X-ray Wilhelm Conrad] Röntgen's experiments: the inadequacy of human sense perception,” which, Henderson claims, helped set the ground for how such “inadequacies” might be redressed by modernist formal strategies, such as the cubist's multiplication and superposition of perspective. See Linda Dalrymple Henderson, “X Rays and the Quest for Invisible Reality in the Art of Kupka, Duchamp, and the Cubists,” *Art Journal* 47, no. 4, Revisiting Cubism (Winter, 1998): 325. For the link between Kupka and wireless telegraphy, see Henderson, “Vibratory Modernism,” 139.

<sup>44</sup> Douglas, “Energetic Abstraction,” 90. Quoted from Kliment Redko's archive in Irina Lebedeva, *Velikaia utopiia: Russkii i sovetskii avangard 1915-1932* (Moscow: Galart, 1993), 187.



whether they are, like the X-Ray, revealing the interior of the body, or communicating across vast distances without any seeming material support, in the case of wireless telegraphy—provide artists the means for thinking their practices in new ways. This link between aesthetics of energy and their technical milieu is exceedingly important for Downey as well, and any historical exploration of energy’s place in art.

Media art historian Douglas Kahn, in his *Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts* (2013), helps further clarify how technology has always been important for artists trying to think, or create, through the force fields of electromagnetism. His is a history of electromagnetism’s role throughout art and literature starting from the mid-nineteenth century—with a special focus on its aural manifestations and later use by sound artists in the 1960s. Essential for Kahn is the notion of “lived electromagnetism,” which can be easily contrasted against the figurations of electromagnetism dealt with in the previous section on physics.<sup>45</sup> Those earlier figurations were arrived at through exacting regimens of experimentation and theorization conducted by a privileged few. Conversely, lived electromagnetism constitutes those figurations of electromagnetism that gain shape through more mundane social practices and everyday experiences with electromagnetic forces—usually as they are channeled by telecommunication technologies. Kahn notes: “A public model of electromagnetism and the electromagnetic spectrum was extended at the turn of the twentieth century with radium and X-rays, [and] expanded considerably with radio in the 1920s.”<sup>46</sup> We can take the artists Henderson and Douglas examine, like Kupka and Redko, as proof of this public model’s influence on the

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<sup>45</sup> Kahn explains: “Twentieth-century philosophers, if electromagnetism is invoked, leapfrog over lived experiences of electromagnetism and head straight to theoretical physics and the observably limited behaviors of quantum realities. While understandable in motive, this predilection for cosmology and subatomic physics has left everyday *lived electromagnetism*, from communications to the sun, to others.” Douglas Kahn, *Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts* (Oakland: University of California Press, 2013), 10-12.

<sup>46</sup> Ibid. 11.

representational strategies—whether figural or abstract—of modernist artists. However, an important shift takes place as the 1920s proceeded, and the increasing availability of telecommunications provided artists the means to harness energy more directly in their practices—*presenting* it rather than *representing* it. This genealogy turns to Dadaist Raoul Hausmann as emblematic of this shift.

In “The Touch through Time: Raoul Hausmann, Nam June Paik and the Transmission Technologies of the Avant-Garde,” media art historian Ina Blom thinks together the work of Hausmann, his technologically-inflected notion of “televisual touch,” and the early televisual experiments of video forerunner Nam June Paik. Through this constellation, Blom reexamines the origins of video art, and while this is crucial, her essay is helpful for other reasons.<sup>47</sup> We can understand Blom’s analysis of Hausmann’s “televisual touch” as concerning the relationship between the material and the energetic—both on the genealogical level of which material technologies, infrastructures, or technical milieus in the 1920s might generate new ways for artists to capture energy; and what the resultant harnessing of that energy means more abstractly for art’s materiality as such. A key object in all of this is Hausmann’s *Optophon* (1920-1936), a

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<sup>47</sup> Downey himself is perhaps best known for his multichannel video installations and single-channel videotapes, however that is not the present concern. Chapters three, four, and five are all concerned with Downey’s video work. Blom’s intervention into the history of video is especially important because video has often been treated as the medium to which the technical feat of harnessing electromagnetic energy is almost exclusively ascribed. This idea is summed up well by organizer and administrator of the KQED Experimental Television project, Brice Howard, quoted in a 1970 interview with Gene Youngblood, saying when it comes to working with video, “the material just happens to be the electron.” The quaintness of this “just happens” assertion belies how momentous many early video artists believed their new medium actually was. To use an electron as the painter uses pigment was a technical-aesthetic advance with very little precedent, and video artists prized this uniqueness. Though it was an inescapable fact that broadcast, corporate television was predicated on exactly the same technology. Later histories of video approach the medium from the angle of its technical specificity and relation to television. Relevant texts include, Yvonne Spielmann, *Video: The Reflexive Medium* (Cambridge, MA: MIT Press, 2008); and David Joselit, *Feedback: Television Against Democracy* (Cambridge: MIT Press, 2007). Ina Blom’s later work, *The Autobiography of Video: The Life and Times of a Memory Technology* (Berlin: Sternberg Press, 2016), unfolds this media-specific rendering of video into a longer historical view that encompasses early experiments in radar and television as integral to a history of video told from the perspective of the apparatus itself, and bounded by its analog timeframe, ending when video becomes digital in the late-1980s.

device he constructed able to translate electric manifestations of light into sound signals, and vice versa. Hausmann approximated the machine as “if one places a telephone in the circuit of an arc lamp,” and the light and sound waves mutually transform one another.<sup>48</sup> The telecommunications of Kahn’s lived electromagnetism fill out one half of Hausmann’s metaphor, and the machine itself was compromised of cutting-edge signal-transmissions apparatuses.

For Blom, the *Optophon* is a point of intersection between nascent media art strategies focused on transmission, and those novel technological infrastructures making signal transmission a daily reality of lived electromagnetism. At this intersection, Blom explains, Hausmann arrives at “a new tactility;” one that “could only be imagined in terms of an electronic and tele-communicational nature, in which the somatic limits of the material body are extended indefinitely.”<sup>49</sup> Blom’s main argument is that such a “new tactility” prefigures similar debates happening decades later within the video art of the 1960s and 1970s, thus providing an important, new historical contextualization. Importantly, Hausmann was concerned with what kind of new physicality might be generated by these new technologies and their aesthetic counterparts—not how physicality might be displaced by their signaletic/energetic nature. This is quite different from earlier attempts at representing energy through painting, for example, where the activity of energy comes across either in the dissolution of figures within the pictorial plane (Henderson), or the evacuation of figures all together through abstraction (Douglas). To reiterate this key point, Hausmann’s attempt to capture energy opens *onto* concerns with materiality, rather than the suspension of materiality within a paradigm of pure energy. Blom notes how

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<sup>48</sup> Hausmann writes, “If one places a telephone in the circuit of an arc lamp, the arc of light is transformed because of the sound waves that are transformed by the microphone in accordance with variations corresponding exactly to acoustic vibrations, that is to say, the rays of light change form in relation to sound waves.” Quoted from Jean-Francois Bory, *Raoul Hausmann* (Paris: Editions del’Herne, 1972) in Jacques Donguy, “Machine Head: Raoul Hausmann and the Optophone,” *Leonardo* 34, no. 3 (2001), 218.

<sup>49</sup> Ina Blom, “The Touch through Time: Raoul Hausmann, Nam June Paik and the Transmission Technologies of the Avant-Garde,” *Leonardo* 34, no. 3 (2001): 211.

Hausmann's conception of "televisual touch" was also informed by recent theoretical advances in understanding electromagnetism's relation to light and vision—which might be more properly inscribed outside the realm of "lived electromagnetism."<sup>50</sup> From this we learn art's attempt to capture energy relies just as much on those lived, technologically mediated, and infrastructural elements of the electromagnetic field, as it does on those more theoretical figurations from the previous section.

When taken together, the art historical examples of Blom, Charlotte Douglas, and Linda Dalrymple Henderson sketch an important trajectory for this genealogy and any aesthetics of energy broadly considered. Within the span of decades, one can trace genealogical lines of descent moving through artists' static representation of energy, in painting for example, to the direct harnessing of electromagnetic signals in art as a kind of material and media. Downey himself created paintings and drawings appearing to give energy a pictorial form. He did so in the years before he embarked on his electronic sculptures—discussed in the following chapter—which would mark a major shift in his practice towards the media art for which he is currently best-known. What's more, many of the drawings look like diagrams and blueprints for those later sculptures, with similarly boxy forms and what look like clouds of particles hovering around them—no doubt representations of the material-energetic force of electromagnetism the sculptures themselves would later harness.

That is all to say, Downey's own aesthetics of energy tracks across the history sketched throughout this section. And it does so even in terms readable through telecommunications and Kahn's lived electromagnetism. Many of Downey's electronic sculptures performed communicative capacities—recording voice, playing sound, literally sending information to both

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<sup>50</sup> Ibid. 212.

the viewer and even other sculptures in and outside of the gallery. The title of his 1969 electronic sculpture, *With Energy Beyond these Walls*, makes this point well. Downey gave electromagnetism a *lived*, if sculptural and environmental, form while simultaneously staying in contact with the more theoretical advances of physics from the previous section. It's imperative to understand this history of art's attempt to capture energy, and the terms that help make it legible, as they provide the ground atop which Downey's aesthetic of energy would later emerge.

### Electromagnetism Post-1945

This final section constellates the advent of atomic weaponry, Cold War media art, and cybernetics to trace a historically-specific neutralization of electromagnetism's material-energetic reality. More basically, this section is concerned with electromagnetism's changing place within the sociotechnical imaginary of the postwar era. Here, electromagnetism goes from a power of catastrophic material destruction let loose by the dropping of two atomic bombs on Hiroshima and Nagasaki during the summer of 1945 by the United States military, to a seemingly materially-unspecific element transmitted by the signals of a new apparatus of control and communication. What is at stake in this section is how to recuperate a more materially-rendered understanding of electromagnetism precisely when its materiality—and history—appears uncritically forgotten and displaced by the informational paradigm of cybernetics. To complicate matters, this moment witnessed a growing collection of media artists deploying cybernetic theories with the help of electromagnetic technologies.<sup>51</sup> With the help of Foucauldian

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<sup>51</sup> It would be helpful to understand what happens to electromagnetism at the hands of cybernetics as a kind of “dematerialization,” though that is a heavily loaded term. It is true that within the apparatus of cybernetics, electromagnetism's materiality was sidelined in favor of the transmissive possibilities of the information for which it served as a channel. Dematerialization here should not be confused with the discourse of dematerialization popular with conceptual artists in the 1960s—though the two are linked in ways that will become clearer in the following chapter. The most well-known elaboration of dematerialization in contemporary comes via Lucy R. Lippard's *Six Years: The Dematerialization of the Art Object From 1966 to 1972* (New York: Praeger, 1973). Her work will factor

thinker Rey Chow, this section captures the contradictory changes in knowledge production followed by the aftermath of atomic war; how those changes can be read within postwar media art; how cybernetics catalyzes such changes; and electromagnetism's place within this aesthetic and sociotechnical assemblage. It concludes with an attempt to reassert electromagnetism's energetic materiality contra cybernetic theories of information in ways directly beneficial for the following chapters' concrete engagements with Downey's practice.

Quantum mechanics reemerges at this point in the genealogy, though in far less abstract—and much more terrifying—terms. As the twentieth century progressed, interrogations into the complex relation between matter and energy shifted from a concern with the fundamental nature of physical reality, to how that nature might be utilized in weapons of mass destruction. Theoretical physicist turned feminist theorist and science and technology studies scholar Karen Barad gives this shift a haunting image. Once the “[t]he smallest of smallest bits, the heart of the atom” was discovered, it wasn't long before it was “broken apart with a violence that made the earth and the heavens quake. In an instant, in a flash of light brighter than a thousand suns, the distance between heaven and earth was obliterated... physically crossed out by a mushroom cloud reaching into the stratosphere.”<sup>52</sup> Douglas Kahn notes too that, the formation of “lived

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into the next chapter significantly, as well as its critiques by the conceptual art group Art & Language; see, Terry Atkinson, “Concerning the Article ‘The Dematerialization of Art,’” in *Conceptual Art: A Critical Anthology*, eds. Alexander Alberro and Blake Stimson, 52-59 (Cambridge: MIT Press, 1999). The idea for the following chapter is to more concretely explore Downey's early works and interrogate what “dematerialization” really meant within conceptual art, and furthermore, what something like energy, or even the cybernetic notion of information, brings to the conversation. Edward Shanken's *Art in the Information Age: Technology and Conceptual Art*, *Leonardo* 35, no. 4 (2002): 433-488, will be important to this chapter as well for the parallels it draws between conceptual art and the art and technology movement in which Downey is usually understood to have participated. There were artists at this time—like Robert Barry—who were thinking of conceptual art on energetic terms, and bringing Downey into the conversation serves to give them new attention. Finally, with the help of Karen Barenza's recent *Dematerialization: Art and Design in Latin America* (Oakland: University of California Press, 2020), chapter two will try to reinvigorate what dematerialization could mean from the standpoint of the twenty-first century.

<sup>52</sup> Karen Barad, “No Small Matter: Mushroom Clouds, Ecologies of Nothingness, and Strange Topologies of Spacetime-mattering,” in *Arts of Living on a Damaged Planet: Ghosts of the Anthropocene*, eds. Anna Tsing, Heather Swanson, Elaine Gan, and Nils Bubandt (Minneapolis and London: University of Minnesota Press, 2017), G103. “The smallest of smallest bits” is a reference to quantum physics, *quantum* itself being described as “a very

electromagnetism “resolutely reached the end of the spectrum at gamma with the atomic bombs in 1945. The [electromagnetic] spectrum was completed with the specter of complete annihilation.”<sup>53</sup> Any aesthetic use of electromagnetic energy during the second half of the twentieth century was undertaken in the shadow of Barad’s mushroom cloud, and haunted by Kahn’s specter, whether consciously acknowledged or not.

Rey Chow provides the means for thinking through the changes in knowledge production that occurred at this point in time. As she explains in her *Age of the World Target*, “what was remarkable in the incident of the nuclear blast was not merely the complexity of scientific understanding but the manner in which science—in this case, the sophisticated speculations about the relationships among energy, mass, speed, and light—was itself put at the service of a kind of representation whose power resides not in its difficulty but in its brevity and ready visibility.”<sup>54</sup> Science in the service of representation indicates a historical situation where the complexities of hard science—atomic physics in this case—are condensed into forms whose communicability extends far beyond the domain of the specialists who devised them. For Chow, this marks a “pivot”—elaborated first by Martin Heidegger, whom she cites in, and borrows inspiration for the title of, her essay—where “[s]cience has, in modernity, reached the paradoxical point whereby it is simultaneously advanced and reduced.”<sup>55</sup> That is, the advancements of science and technology—including those in this genealogy, like the elaboration of the electromagnetic field and the insights of quantum mechanics—become, in the postwar era,

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small quantity of electromagnetic energy. See Oxford English Dictionary, s.v. “quantum,” accessed May 26, 2020, <https://www.oxfordlearnersdictionaries.com/definition/english/quantum>

<sup>53</sup> Kahn, *Earth Sound Earth Signal*, 11.

<sup>54</sup> Rey Chow, “The Age of the World Target: Atomic Bombs, Alterity, Area Studies,” *The Age of the World Target: Self-Referentiality in War, Theory, and Comparative Work* (Durham and London: Duke University Press, 2006), 28.

<sup>55</sup> Ibid. 29. Chow’s essay title, “The Age of the World Target” is a direct reference to the Heidegger essay, “The Age of the World Picture.” See Martin Heidegger, “The Age of the World Picture,” *The Question Concerning Technology and Other Essays*, trans. William Lovitt. (New York: Harper & Row Publishers, 1977).

increasingly collapsed within self-effacing and easily transmissible forms. In the case of the atomic bomb, it's the image of the mushroom cloud or the seemingly simple equation of  $E = MC^2$  underpinning the bombs' physics—not the difficult to understand relationship between gamma rays, ionizing radiation, human flesh, concrete, and electromagnetic energy emissions.<sup>56</sup>

Chow understands the mushroom cloud or equation as symbols communicative of the threat of total destruction with far more ease than the (anti)material realities of the bomb itself. Moreover, Chow notes how this self-effacing collapse of complex wartime science seeps into and shapes civilian media technologies (many of which are used by media artists) that belie their destructive origins and perpetuate an uneasy state of peace whose very condition of possibility is technologically-activated war:

Our daily uses of the light switch, the television, the computer, the cell phone, and other types of devices are all examples of this paradoxical situation of scientific advancement, in which the portentous—what Heidegger calls 'the gigantic'—disappears into the mundane, the effortless, and the intangible. We perform these daily operations with ease, in forgetfulness of the theories and experiments that made them possible. Seldom do we need to think of the affinity between these daily operations and a disaster such as the atomic holocaust.<sup>57</sup>

What Chow is insisting here is a focused attention on the ways in which seemingly ordinary technical media are attached to techniques and technologies of power and oppression. To think Chow's work in terms of an analysis of an aesthetics of energy, Downey's particularly, would mean to ask: How is a reading of his electronic sculptures, for example, informed by the fact that the energy they were built to detect, and the technical origin of the embedded sensors performing that detection, are themselves both implicated in the historical moment that witnessed energy's most destructive potential realized? This is a difficult question given the ways in which

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<sup>56</sup> Ibid. 28.

<sup>57</sup> Ibid. 30. Excavating the link between these "daily operations" and the research labs and battlefields they nascently emerged from is a key task for Chow, important one here as well, and genealogical study in general.



Downey's use of energy appears at the service of much more benign aims—like creating the aesthetic conditions for an electromagnetic confluence of cosmic energy and human thought.

No doubt, such a contradiction makes asking the question all the more pressing, and it fits into a growing body of literature spanning art history and media studies seeking to understand the uneasy links between early media art and technologies with military origins. Yuriko Furuhashi's essay from this chapter's first section, "The Fog Medium: Visualizing and Engineering the Atmosphere," fits into this category, and she sums up the trend well in an earlier, similar text. "Numerous art historians in recent years" have argued that

claims for the sensory and political emancipation made possible by participatory and multimedia art forms such as expanded cinema, happenings, installation art, and performance art are troubled by their reliance upon the very military technologies and political techniques from which those artists sought to escape.<sup>58</sup>

One could point to several examples of this within the contemporary media art of the 1960s and '70s. Furuhashi mentions American media artist Stan VanDerBeek as "exemplary in this regard," with his ultimately unrealized plans for a network of global satellites beaming content into a series of MovieDromes—domed projection surfaces whose first iteration was installed inside the roof of an upstate New York farm's grain silo. The MovieDrome hosted multiple projectors running simultaneously with collaged and found footage taken from news and advertising, interspersed with psychedelic colors and light effects characteristic of the counterculture.<sup>59</sup> Furuhashi is not alone in noting how all-encompassing image surfaces bear striking resemblance

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<sup>58</sup> Yuriko Furuhashi, "Multimedia Environments and Security Operations: Expo '70 as a Laboratory of Governance," *Grey Room* 54 (Winter 2014): 64.

<sup>59</sup> Ibid. Much has been written on VanDerBeek in recent years, figuring him as a major forerunner of expanded cinema, while making a point to identify the links between his work and a militarized mediascape. A good example is Jacob Proctor, "From the Ivory Tower to the Control Room," in *Stan VanDerBeek: The Cultural Intercom*, ed. Bill Arning and Joao Ribas, 99-107 (Cambridge, MA: The MIT List Visual Arts Center/Contemporary Arts Museum Houston, 2011). A more general art history of VanDerBeek's work is offered by Gloria Sutton, *The Experience Machine: Stan VanDerBeek's Movie-Drome and Expanded Cinema* (Cambridge: MIT Press, 2015) whose ideas will appear in later chapters.

to security control rooms and military planning centers.<sup>60</sup> Even video itself, which would become emblematic in the 1970s for multi-channel, multi-surface, multi-image installation spaces, originates within the same technical milieu as the cathode-ray screens of military radar technology.<sup>61</sup> Thinking these media art advances through the prism Chow offers above renders the multi-image installation space as another instance where the complexities of wartime science are “simultaneously advanced and reduced,” where the technological infrastructures of war are compressed within, and dispersed throughout, ostensibly peacetime—even utopian—media assemblages.

But how can figurations of electromagnetism be reintroduced into this historical analysis? Where do the material realities of electromagnetism operate here? An obvious but less incisive answer could be that many of the technologies just mentioned are electromagnetic in nature, but that doesn’t capture what’s actually at stake in this final section. Key to the easy transmission of images and data within media art installation practice as well as the military logistics of perception, is the belief that such forms could ceaselessly circulate across different screens, technical media, geographies, and material substrates without loss of meaning or potency. This is a major legacy of North American cybernetics.<sup>62</sup>

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<sup>60</sup> There is a long list of historians who have tackled the entangling of media, art, military techniques, and technologies, some of which are referenced in the Furuhashi essay cited above. A sampling of texts could include: Fred Turner, “*The Family of Man* and the Politics of Attention in Cold War America,” *Public Culture* 24.1 (2012): 55-84; Beatriz Colomina, “Enclosed by Images: The Eameses’ Multimedia Architecture,” *Grey Room* 2 (Winter 2001): 5-29; Orit Halpern, *Beautiful Data: A History of Vision and Reason from 1945* (Durham: Duke University Press, 2014); Janet Kraynak, “Dependent Participation: Bruce Nauman’s Environments,” in *Art and the Moving Image: A Critical Reader*, ed. Tanya Leighton, 228-45 (London: Tate Publishing, 2008); and Kenneth White, “Strangeloves: From/De la région centrale, Air Defense Radar Station Moisie, and Media Cultures of the Cold War,” *Grey Room* 58 (Winter 2015): 50-83.

<sup>61</sup> Blom, *The Autobiography of Video*, 45. Though brief, Blom figures the work of radar-technician turned painter Karl-Otto Götz as just one nascent instance of the kind of televisual art video would later see expanded into a full and institutionally codified medium.

<sup>62</sup> This chapter focuses particularly on the development of North American cybernetics because Downey and his contemporaries were closest to it. It is important to acknowledge cybernetics was not a singularly American enterprise, however. Cybernetics became a state science within the USSR, it was widely applied to business management in the UK, and was even—for a short period of time in the early 1970s—proposed as a means by which

Cybernetics was a major touchstone for not just Juan Downey, but large swaths of 1960s and '70s media art scene, and introduces major challenges to a more materially rendered account of electromagnetism's history within the arts and aesthetics of energy broadly considered.<sup>63</sup> Thinking electromagnetism at this critical, historical juncture would mean to ask: How, and with what effects, does electromagnetism pass from the annihilating violence of a nuclear blast, to the seemingly sur- or sub-material entity of information?

German media theorist Claus Pias succinctly sums up cybernetics as “less a discipline than an epistemology; it becomes activated within disciplines” through a shared set of terms, questions, and analogies.<sup>64</sup> Information is perhaps one of the most important, though difficult to define, terms in the cybernetic lexicon and much cybernetic thinking organizes itself around it. Information works to subsume the embodied specifics of matter and energy within a framework where such specifics are made ancillary to the functions of representation and easy circulation. This is yet another instance of the “brevity and ready visibility” Chow find endemic to this historical moment. This is a deeply contradictory situation once it's revealed that information was literally formulated as equivalent to entropy, a physical notion concerned with describing the

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the newly nationalized economy of democratic socialist president Salvador Allende in Chile might run. This last element of cybernetics' history is important for understanding Downey's work in chapter two and will rely on Eden Medina's *Cybernetic Revolutionaries: Technology and Politics in Allende's Chile* (Cambridge, MA: MIT Press, 2011.) See also: Benjamin Peters, “A Global History of Cybernetics,” *How Not to Network a Nation: The Uneasy History of the Soviet Internet* (Cambridge, MA: MIT Press, 2016).

<sup>63</sup> The scholar most responsible for elaborating Downey's relation to cybernetics is Julieta González, with essays such as “Beyond Technology: Juan Downey's Whole Earth,” *Afterall: A Journal of Art, Context and Enquiry*, no. 37 (Autumn/Winter 2014): 14-27; and “Juan Downey's Communications Utopia.” In *Juan Downey, 1940-1993*. Edited by Julieta González and Javier Rivero Ramos, 467-92. Mexico City: Ediciones MP, 2019. For just two more general essays on cybernetics influence in the contemporary art scene see: Etan J. Ilfeld, “Art and Cybernetics: Waves of Cybernetic Discourse within Conceptual, Video, and New Media Art,” *Leonardo* 45, no. 1 (2012), 57-63; and Edward Shanken, “Cybernetics and Art: Cultural Convergence,” in *From Energy to Information: Representation in Science and Technology, Art, and Literature*, eds. Bruce Clark and Linda Dalrymple Henderson, 155-77 (Stanford: Stanford University Press, 2002). These works will be discussed in-depth in the following chapter in relation to more extended readings of Downey's electronic sculptures.

<sup>64</sup> Claus Pias, “Hollerith ‘Feathered Crystal’”: Art, Science, and Computing in the Era of Cybernetics,” trans. Peter Krapp, *Grey Room*, no. 29, New German Media Theory (Fall, 2007), 111.

tangible activity of energy and its dissipation in closed systems (a favorite analytical object of early cybernetic thinking).

What follows is a very brief intellectual history of information's origins, and cybernetics more generally—required to fully reckon with their historical effects relevant to the current genealogy. Historian Roland Kline argues that by “adopting the language and concepts of cybernetics and information theory, scientists turned the metaphor of information into the matter-of-fact description of what is processed, stored, and retrieved in physical, biological, and social systems,” and helped initiate a major epochal shift towards the what has been described as the “information age.”<sup>65</sup> At base, cybernetics was concerned with the development of an analytical toolset general enough to accurately describe what goes on across that wide range of systems and was first summed up by one of its most prominent forerunners, Norbert Wiener, in the following way: “cybernetics attempts to find the common elements in the functioning of automatic machines and of the human nervous system, and to develop a theory which will cover the entire field of control and communication in machines and in living organisms.”<sup>66</sup> Information was understood as what was being communicated in both organic and technical systems, and information's control was paramount to cybernetic thinking.

Here are the two most famous descriptions of information: the first by Wiener and then by Claude Shannon, both mathematicians. They are importantly similar but different. Similar

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<sup>65</sup> Roland Kline's *The Cybernetics Moment: Or Why We Call Our Age the Information Age* (Baltimore: John Hopkins University Press, 2015), 6. For Kline, the “information age” is a contemporary description for an age in which information processing machines, such as computers, video cameras, cellphones, and more extended digital infrastructure contour and support most activities within daily life. Kline maintains the historical “invention of cybernetics and information theory is as important as the invention of information technologies in understanding the present age.

<sup>66</sup> Norbert Wiener, “Cybernetics,” *Scientific American* 179, no. 5 (November 1948): 14. The word *cybernetics* comes from the Greek word for *steersman* which is also where the word *governor* comes from. Wiener would paraphrase the the formulation of cybernetics above as the subtitle in his *Cybernetics: Or Control and Communication in the Animal and Machine* (Cambridge, MA: 1948), one of his most widely known texts.

because the two men understood the information of a message to be related to entropy—the thermodynamic measure of a system’s dissipated energy and consequent inability to do work, or generate productive force.<sup>67</sup> Their difference lies in the fact that Wiener believed information to be equivalent to *negative* entropy (which led to the portmanteau *negentropy* popular among media artists), and Shannon believed it was equivalent to *positive* entropy. More specifically, for Wiener a message contained more information the more ordered it was, the more predictable it was, and thus the less entropy it had. For Shannon, more information was held in an effectively disordered message, as more entropy and more unpredictability would yield more information.<sup>68</sup> The difference between the two theories rests on their intended applicability, as Wiener was concerned with the meaning and legibility of information in a wider sense, while Shannon formulated his theory with the domain of electromechanical engineering firmly in mind. For Shannon, messages were being read only by electromechanical machines whose “language” was that of volts and charges, where a more unpredictable transmission smeared out across a range of frequencies provided more information for the system to act on. What’s important to understand about both theories is, first: they relate information with the physical, energetic concept of entropy; and second; both theories—and the concept of information itself more generally—are intended to work over and above whatever material or physical substrate might be transmitting information *in media res*.

Both points define a central contradiction within the concept of information—a contradiction that makes difficult understanding how electromagnetism might play a role in

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<sup>67</sup> The second law of thermodynamics concerns entropy, stating it always already increases towards a maximum in closed systems. The more apocalyptic renditions of this law foretell the “heat death” of the universe, where entropy has reached its apex and all conceivable energy has been dissipated and equally dispersed.

<sup>68</sup> Kline, *The Cybernetics Moment*, 11-18. Wiener put forth his theory of information in book, *Cybernetics*, cited in the footnote above, and Shannon released his theory “A Mathematical Theory of Communication,” *Bell System Technical Journal* 27, no. 3 (1948): 379-423. Both came out in 1948 and the theories of information based on entropy are typically described as the Wiener-Shannon theory, though the order of the names is sometimes disputed.

cybernetics, art influenced by cybernetics like Downey's and others', and in the historical moment of the information age. Though the predominant, cybernetic theory of information was arrived at through the physics of energy and its material effects, it helped facilitate a gradual demotion of physicality and materiality. In one of the most well-known studies of cybernetics and its socio-cultural implications, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*, N. Katherine Hayles describes the arc of early cybernetics in the following way. Early cybernetics is the story of how "*information lost its body*, that is, how it came to be conceptualized as an entity separate from the material forms in which it is thought to be embedded" and "as a kind of bodiless fluid that could flow between different substrates without loss of meaning or form."<sup>69</sup> Electromagnetism, however effaced it might be from theories of information and cybernetics more generally, is especially important to this story.

Within the anti-aircraft weapon control systems Wiener was working on when he first started thinking about cybernetics, the electromechanical telecommunication apparatuses Shannon's theory helped refine, and even the electrochemical impulses that animate organic nervous systems, the material-energetic realities of electromagnetism and its field are fundamentally present. In so many cases, electromagnetic energy *is* the "body" of information. It is deeply embedded within the histories, theories, and tangible systems of the very cybernetic epistemology that would discard it. This is perhaps unsurprising if we again recall Chow's claim that the complexities of science at this time were both simultaneously advanced, reduced, and put to the service of more easily transmissible forms seeking to diffuse wartime media techniques and technologies into peacetime life.<sup>70</sup> The cybernetic assemblage of information, message, and

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<sup>69</sup> N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: The University of Chicago Press, 1999), 2, xi. Italics in the original.

<sup>70</sup> Chow, "The Age of the World Target," 29.

content mobilizes itself with the intent of subsuming the materiality and complexity of the processes, experiments, apparatuses, and histories which brought them into being—an operation in line with the historically-specific transformation of knowledge production Chow helps us recognize. This section, and the genealogy of which it's a part, are attempts to redress this.

Concluding this section with the inherent contradictions of cybernetics is important for the deeper engagements with Downey's aesthetics of energy—and the artworks that embody it—following in the next chapters. Many scholars of Downey's work position cybernetics as a key framework for understanding his practice, though this positioning does help in contextualizing the immediate influences of his historical moment. But what I hope has been made clear by now is that a potential cybernetic rendering of his practice has deficiencies symptomatic to cybernetics itself. Implicated as it would be in cybernetics' historical dissolution of materiality, such a framework risks failing to capture the kind of challenging materiality inherent within a body of work so deeply in contact with, and committed to, material-energetic forces—electromagnetism chief among them. Central to much of this dissertation—though unfolded more thoroughly in following chapters—is the idea that, for Downey, electromagnetic energy possesses a kind of materiality certain understandings of cybernetics would otherwise dissolve into Hayles' evocative “bodiless fluid.” Only a more embodied and material-energetic rendering of electromagnetism will suffice in the richest possible account of Downey's practice and its importance for contemporary art history.

Conclusion: Staying Grounded, Staying *Earthed*

Ask any electrician: All sources of electromagnetism need to be literally grounded to become useful.<sup>71</sup> The process is also called *earthing*, and this technical metaphor has its uses. The electromagnetic field needs to be temporarily concentrated in some kind of material formation if its energy is to be circuited and put into action—like a wire running from behind a light switch into the foundation of a building, or a cell-phone tower’s pylons reaching far beneath ground. Even portable devices need to be reconnected to grounded sites every now and again. Such measures allow excess electromagnetic charge to harmlessly dissipate into the earth, or be recouped once more, so the elements of that charge that can be put to work—illuminating a room, or communicating overseas. No doubt, as a cosmic force there is an inconceivable excess to the electromagnetic field, and thus it behooves one to concentrate it where necessary. This chapter has identified electromagnetism as a basic power source for this and that media apparatus, but it has simultaneously cautioned against what kind of too-easy identifications such a move might open onto. Conversely, electromagnetism risks becoming too pervasive, uselessly so, if uncritically treated as the end all be all of matter and energy. Though on purely physical grounds, it claims such a status easily and almost inarguably. It certainly did for Downey himself. Therein lies the difficulty of discussing electromagnetism. It is true that electromagnetism activates the signal transmission technologies of interest to so many artists, engineers, media art historians and media studies scholars. What’s more, it reaches out into the extraterrestrial vastness of space and deep down into the furthest, mind-bending scales of subatomic quanta. These insights can be put to work, but only if the proper grounding, or *earthing*, takes place.

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<sup>71</sup> Kevin Beck, “Grounding (Physics): How Does It Work & Why Is It Important?” *Sciencing*, accessed July 4, 2020, <https://sciencing.com/grounding-physics-how-does-it-work-why-is-it-important-13721177.html> is a nontechnical summary of this process.



This chapter has been an exercise in precisely that. It is a genealogy aimed at providing the necessary scientific, technical, historical, theoretical, and artistic transformations required to make it thinkable for electromagnetic energy to be active within society at large in such a way that it might emerge distinctly as a *material* to be worked with—a media and medium able to provide the foundations for a particular and historically-situated aesthetics of energy. Again, this is a challenging kind of materiality, an energetic materiality exerting pressure on commonsense notions of material, media, and medium—just as early experiments in electromagnetism exerted pressure on classical renditions of space itself. The attention paid to electromagnetism’s history above seeks to *ground* those challenges in experiments, assemblages, artworks, and events from the early nineteenth-century until the mid-1960s, when Downey fully arrives on the North American media art scene. The genealogy provides the toolset needed for any extended and concrete analysis of Downey’s work. His sculptures, installations, and videos give rise to mutable electromagnetic fields; they seek capture energy in ways similar to the long art history of the aesthetics of energy outlined earlier; and they do so squarely within sociotechnical imaginary of the Cold War era explored in the previous section. As this dissertation moves forward, field thinking will reappear, early lineages of art’s attempt to capture energy will factor in, and the whole milieu of postwar science and technology will tangle together. Juan Downey’s aesthetics of energy provides a uniquely coherent practice to see all this in action, and we are now in a better place to concretely understand how.

## Chapter 2 – Sculpture in the Electromagnetic Field

### Introduction

This chapter explores Juan Downey's electronic sculptures, produced between 1967 and 1969, as articulating the first steps of his aesthetics of energy. More specifically, in what follows I claim that these sculptures represent the artist's most significant initial attempts to harness electromagnetism in the making of art, and in ways deeply consequential for our understanding of then contemporary debates concerning art—and energy's—materiality within the cybernetic sociotechnical milieu of the late-1960s. This historical moment is where chapter one's genealogy of electromagnetism ended. Chapter two zeroes in on the conclusion of that genealogy to see specifically how Downey's practice was contoured by and responded to its pressures. Put differently, what does his aesthetics of energy look like at this early phase of his career? What can these electronic sculptures tell us about Downey's aesthetic commitment to electromagnetism, and how such a commitment fits within the art of the late-1960s? Here we start to unfold more fully this dissertation's main claim, that Downey's art can be understood as aesthetics of energy: a concerted, multi-media attempt to understand how energies might play a transformative role in the making of art; how they can be channeled in the formation of objects, environments, and identities; and how, and towards what ends, they have been positioned as resources in the developments of modernity, de/coloniality, and the geopolitics of the Cold War. Answering the questions above will start us on the path of seeing anew energies implication within the *longue durée* of contemporary art, and Downey's own unique contributions to an aesthetics of energy as a viable art historical category and site of future investigation.

This chapter's primary contribution is a materially- and energetically-specific reading of Downey's electronic sculptures and their primary energy: electromagnetism. How, and by what

means, do they harness electromagnetism? What kinds of electromagnetic environments or entities do they reveal? What other forms of energy do they transduce electromagnetism into? What makes these energetically and materially sensitive operations important in context? And what other artists might have been thinking or working along similar lines? The histories and terms of physics introduced in the previous chapter—like the concept of the field and its quantum paradoxes—are especially important to answering these questions in a satisfactory manner, as is the previous chapter's exploration of electromagnetism's place within the cybernetic paradigm.

To that last point specifically, this chapter departs from the usual readings of Downey's electronic sculptures because it positions those sculptures in a more antagonistic relation to cybernetics than is typically the case. More specifically, the main claim of this chapter is that Downey's electronic sculptures perform an energetic withdrawal, a revealing of the ways in which terrestrial and extraterrestrial energies are only ever partially present, both to the limited bandwidth of the human sensorium and even to the more extended sensorium of then contemporary technical media. This is important because it introduces a new, speculative element into Downey's work, loosening its ties to the cybernetic paradigm and clarifying where resistance to that paradigm might be found. To claim this, however, is to accept an immense challenge.

The previous chapter introduced the idea, which this chapter will unfold more explicitly, that the postwar cybernetic paradigm of information actually stymies a deeper, material-energetic rendering of electromagnetism and art made with it like Downey's. This is because a hallmark of cybernetic thought was that the particularities of material or energetic embodiment were ancillary to the circulations and feedback-mechanics of information as a disembodied concept.

The challenge becomes clear once it's stated that not only was Downey was operating in, but at times he was expounding the virtues of, the "information age." One of the artist's personal notebooks lists some of his influences, including notable cybernetic thinkers Arturo Rosenblueth and Gregory Bateson.<sup>1</sup> Beyond that, a 1968 drawing of his, sharing a title with the electronic sculpture *Against Shadows* (1968), states clearly: "WHAT'S INTERESTING: CREATE SYSTEMS OF INFORMATION" [fig. 1]. Though the total body of scholarly work on Downey is relatively small, and the work on his electronic sculptures even smaller, most scholars focus on his cybernetic rhetoric (of which there are more examples) and regard the electronic sculptures as especially emblematic of cybernetic thinking in the arts. Notably, art historian and independent curator Julieta González—who has produced one of the largest bodies of scholarly work on Downey—privileges his connection to cybernetics.<sup>2</sup> The task then becomes: how to successfully deploy a material-energetic reading, sensitive to the embodiments of energy and matter, in the face of powerful, historical cybernetic influences insisting on a converse logic of disembodiment? Beyond that, where does such a reading lead us?

There is a reason to seek something outside of cybernetics within even this early phase of Downey's career. Most scholars of Downey recognize that his predilection for cybernetics eventually fades as he begins to focus more intently on the geopolitical situation enveloping his native Chile during the early-1970s—spurred on as it was by United States Cold War interventionism, culminating in the coup and murder of democratically elected, Chilean president

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<sup>1</sup> Julieta González, "Juan Downey's Communications Utopia." In *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 472.

<sup>2</sup> The two most notable texts regarding Downey's relationship to cybernetics by González include her "Beyond Technology: Juan Downey's Whole Earth," *Afterall: A Journal of Art, Context and Enquiry*, no. 37 (Autumn/Winter 2014): 14-27; and "Juan Downey's Communications Utopia," in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos, 467-92 (Mexico City: Ediciones MP, 2019). Other scholars who have identified Downey's interest in cybernetics are Carla Macchiavello, Ciara Ennis, and Felicity D. Scott. Each other works will be cited in what follows.

and socialist Salvador Allende in 1973. It was then Downey, while living in the US, began to work with single-channel video almost exclusively, and in the mid-1970s he produces his most well-known body of work: The Amazon Tapes. These are best described as a countervisuality embodied in a quasi-documentary format aimed at the Western European, colonialist and racist foundations of Anthropology.<sup>3</sup> They stage a rigorous critique of the knowable subject at its heart and its teleological conception of historical progress.

These tapes will be dealt with starting in chapter four, but what will become evident here is that the aesthetics of energy, and its material-energetic reading I am proposing as a novel means of engaging Downey's work, can account for this thematic rupture in a way a cybernetic reading has more difficulty doing. We will soon see that the material-energetic analysis of his electronic sculptures allows us to reveal less some self-contained, cybernetic unity of human, technology, and environment—as has been the claimed in the current literature, and often gestured to by Downey himself—and more the ways in which human and technical means of knowing ultimately fail to capture completely the universe's underlying material-energetic reality. Much in the same way Downey's Amazon Tapes show us how the historical assemblage of Anthropology fails to capture the full breadth of Latin American Indigeneity. Though the terms are clearly different between one phase of his work and another, I am insisting on a likewise commitment to critical unknowability, the foregrounding of a fundamental *withdrawal* from access, whatever the object and whatever the mode of access deployed.<sup>4</sup>

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<sup>3</sup> The term “countervisuality” comes from Nicholas Mirzoeff and describes the development of an aesthetic strategy and perceptual system that operates to undermine the dominant modes of representation, vision, and visibility imposed on a society. He frames it as “the right to look,” a making visible of that which those in control would otherwise foreclose. The relevant text here is, Nicholas Mirzoeff, *The Right to Look: A Counterhistory of Visuality* (Durham: Duke University Press, 2011). I will return to this idea fully in chapter four.

<sup>4</sup> I borrow “withdrawal” from the Object-Oriented Ontologies of Graham Harman and Timothy Morton—this is something that will be elaborated below. For now, it suffices to say that withdrawal denotes the resistance of an object from being exhaustively known.

What follows, then—to reiterate this chapter’s main claim—is the idea that Downey’s electronic sculptures stage the ways in which the materialities of energy, and electromagnetism in particular, escape from the technical apparatuses and conceptual schemas that would insist on their capture as information, an insistence that they can be endlessly organized and controlled by cybernetic techniques and technologies. Put differently, Downey allows us to think with the *incompressibility* of the material-energetic world at precisely the point in time where that world appeared increasingly compressed with informatic-cybernetic assemblages—whether they be new environmental sensing technologies, orbital satellites, proliferating surveillance programs, or global media infrastructures. This is important for two reasons. First, it identifies extra-cybernetic dimensions in Downey’s early practice, allowing us to create a significant thematic resonance between ostensibly divergent phases of the artist’s career that will be unfolded throughout the dissertation. Second, it affirms a new kind of unruly agency to the materialities of energy within late-1960s media art and beyond, opening up new sites of art historical investigation. We are well aware today of the catastrophic consequences of believing the environment and its energies to be infinitely manipulable, extractable, and controllable. It might be that the aesthetics of energy helps us imagine alternatives to this dire situation.

To understand how all this works, the chapter proceeds in four sections. The first introduces one of Downey’s electronic sculptures, *Radioactive Chair* (1968), and some of the artist’s own thoughts on the electromagnetic sculptures that will help frame the rest of the chapter, such as his insistence that they create the “illusion of participation.” Through a close-looking, the section then details in a precise way both how *Radioactive Chair* works and the specificity of its material-energetic existence: what kinds of energy it makes contact with, how, and where such energies might originate from. Beyond introducing Downey’s sculptural

practice, this will serve as a demonstration of the material-energetic reading I am proposing, what it can tell us, and what resonance it has with Downey's own interpretation of the sculptures. I will then contrast this kind of analysis with the reading of Downey's electronic sculptures offered in art historian Carla Macchiavello's "Vento Caldo: The Body in Juan Downey's Electronic Sculptures." This text privileges the relations between body and technology as central to these works, with less attention to their energetic materialities. Contrasting my material-energetic method with this one will give a sense of what the interpretative and conceptual stakes are in this chapter, and what contributions it can make.

The second section then zooms out to see what this material-energetic analysis can say in relation to a broader swath of the late-1960s art scene, with special emphasis on the discourse of dematerialization in conceptual art. Here we will further the historical understanding of energy's relation to art's materiality within the cybernetic sociotechnical milieu, identify what challenges such an energetic materiality faced, and learn how other contemporary artists developed their own aesthetics of energy—with a special focus towards the end of this section on the work of Robert Barry. This helps us both delineate what other energetic-aesthetic possibilities were active at this time, and if our notion of energetic withdrawal has resonance outside Downey's practice.

The third section explains in detail what withdrawal means, as well as the concept of "allure" attached to it, with the help of American Object-Oriented philosopher Graham Harman, who has written extensively about Object-Oriented Ontology's relation to the arts. Here, our insistence on Downey's commitment to a critical unknowability and the elusiveness of electromagnetism finds their philosophical counterpart.

From there, in the final section, we introduce more of Downey's electronic sculptures to see material-energetic withdrawal in action yet again, but this time set against a more complete historical and theoretical context. It is here that the full implications of Downey's sculptural practice are unfolded, and what it means to insist on the aesthetic withdrawal of the material-energetic world at a time when the cybernetic paradigm was seeking to render that world as an informational entity.

### Sculpture in the Electromagnetic Field: A First Look

Downey's electronic sculptures' most detailed, primary documentation comes in the form of a short article Downey wrote for the October 1969 edition of the journal *Leonardo*, titled "Electronically Operated Audio-Kinetic Sculptures, 1968." It is here Downey explains, among many other things to be quoted throughout this chapter, that these sculptures "make people aware of the vast number of different kinds of energy in the universe."<sup>5</sup> It is important to mention that, at this early phase, Downey is not explicitly singling out electromagnetic energy as he would later do in numerous writings.<sup>6</sup> This might raise the question: Why then dedicate the previous chapter to a genealogy of electromagnetism and its place within the development of a broader category of energetic aesthetics throughout the twentieth-century? Even within the name, "Electronically Operated Audio Kinetic Sculptures," Downey gestures to the presence of electromagnetism as integral the functioning of these works. And all of the themes from the previous chapter—the concept of the electromagnetic field, its invisibility, the confounding

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<sup>5</sup> Juan Downey, "Electronically Operated Audio-Kinetic Sculptures, 1968," *Leonardo* 2, no. 4 (October, 1969): 403. This important text will be cited frequently and will be abbreviated in following footnotes as "EOAKS."

<sup>6</sup> Later chapters will address this point more directly, but it appears likely that Downey's transition into video—the medium with which he would become most associated—is what generates his explicit mentions of electromagnetic energy. Video, we must remember, is a fundamentally electromagnetic technology. This is not to say Downey's interest in that energy form starts then, however. It is simply to say that the technology provided an especially condensed encounter with the energy he had been working with since at least 1966.



materiality of its quantum paradoxes, and its implication in postwar technoscience—are crucial to this one.

However, though electromagnetism is what activates these sculptures, this chapter will also detail specifically how they sense, generate, and otherwise facilitate other energetic emissions from atop an electromagnetic foundation—sound being the most notable non-electromagnetic element here. Downey makes a point to mention these sculptures interact with “different kinds of energy” and not just one. We cannot overstate the importance of tracing these energetic transformations below. To do so is to resist the collapse of the heterogenous *energies* Downey deploys into a homogenous, materially-unspecified *energy* that would fail to give a sense of the diverse array of forces Downey’s sculptures bring to their art historical context, and where they lead.

Attending to energies in the plural, rather than its singular form, is to answer the call proposed in the edited volume *Energies in the Arts* (2019), a collection of essays that takes seriously the presence of energies within a wide array of aesthetic practices as diverse as Indigenous rituals, the sleek media art of the twenty-first century, and many forms in between.<sup>7</sup> In the volume’s introduction, media art historian Douglas Kahn describes the essays contained therein as a series of studies “on a case-by-case basis where various energies are traced through specifics and set dynamically within contexts, rather than penned in by definitions before they start.”<sup>8</sup> What is important about the general tone of this collection is its insistence that any robust attention to something like an aesthetics of energy necessary implies attention to the (1) energetic transformations such an aesthetics generates, and (2) the unique specificity of whatever energies are deployed by a given artist or artists to catalyze those transformations. The previous chapter

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<sup>7</sup> Any mention of Downey’s work is conspicuously absent.

<sup>8</sup> Douglas Kahn, “Introduction,” *Energies in the Arts*, ed. Douglas Kahn (Cambridge, MA: MIT Press, 2019), 2.

took pains to articulate the history and specificity of electromagnetism for precisely this purpose: to the equip the reader with what they need to understand the role of electromagnetism in Downey's practice. This analysis follows electromagnetism as it is channeled by his electronic sculptures, but it also makes sure to indicate where electromagnetism is transduced into other, different forms of energies, and to what effect.<sup>9</sup>

The very first sculpture Downey mentions in his *Leonardo* article is titled *Radioactive Chair* (1968) [fig. 2]. It has since been destroyed. This work is fairly unique among the rest of his electronic sculptures for its lack of generated light or sound, and relatively low profile—its total height doesn't rise above that of a small stool, an appropriate comparison since it was meant to be sat on.<sup>10</sup> Despite its formal singularity among these sculptures, it works well as an introduction to the electronic sculptures given the cosmic scales and kinds of energies with which it interacts. *Radioactive Chair* is comprised of three basic forms, all white—a cube, another cube fitted with a rectangular lid, and a length of corrugated tubing connecting the two. A simple drawing for the sculpture, completed December 11, 1968, outlines how these forms are supposed to work [fig. 2a]. The cube “picks up radioactivity” and the other construction, on which a spectator would sit, “vibrates your ass.”<sup>11</sup>

While Downey's description is disarmingly unassuming, it masks—perhaps purposefully—an intricacy contained within the sculptures' minimalist forms. The white cube houses a Geiger counter to detect ionizing radiation. This is a form of radiation defined by a basic level of intensity capable of dislodging electrons from their atomic orbits, thus disrupting the stable balance of electric charge within an atom or molecule. Ionizing radiation is found on

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<sup>9</sup> Transduction is the transformation of one form of energy into another, such as the transformation of electromagnetic signals into sound vibrations in the working of an audio speaker.

<sup>10</sup> Precise dimensions for this sculpture are unavailable.

<sup>11</sup> The quoted text is taken from the text written by Downey in fig. 2a.

the ultraviolet end of the electromagnetic spectrum (where gamma rays and X-rays can be found), which means it is invisible to organic, human perception. While ionizing radiation can be catastrophically damaging to living tissues in close proximity, as is the case in nuclear explosions and consequent radioactive fallout, it can also be relatively harmless when released from sources very far away, with the collapse of ancient stars for example. *Radioactive Chair*'s Geiger counter would sense ionized electrons, register their presence, and then activate a device—made by Downey in collaboration with engineer Fred Pitts—that would cause a rumbling vibration. This device was housed in *Radioactive Chair*'s second box, which was slightly larger than the first, topped with a lid, and was intended for spectators to sit atop it [fig. 1a].

In technical terms, *Radioactive Chair* transduces ionized electromagnetic particles into a kinetic vibration sensed by the body. More simply, a distinctly invisible and usually humanly insensible form of energy is made safely sensible for the body by the sculpture. An ionized electromagnetic energy field—attenuated as it would be if it were emitted from the last gasps of an ancient star galaxies away—is thus given some kind of materially-felt presence within the exhibition space. Or maybe the sculpture detected faint, radioactive echoes from nuclear weapons test that were supposed to cease five years prior.<sup>12</sup> Upon the registering of such invisible energy, the presence of an electromagnetic field was partially revealed and made palpable for the spectator within the exhibition environment. This gives a first hint towards what Downey appears to be working through in these sculptures. They are about making contact—in

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<sup>12</sup> A ban on nuclear weapons testing was enacted by signatories from the United States, the Soviet Union, and the United Kingdom on August 5, 1963. It was intended to stop the testing of nuclear weapons in outer space, the earth's atmosphere, and underwater. Though, perhaps unsurprisingly, the Cold War powers sought to find ways around this injunction. For more on this history see: Lynn R. Sykes, "From the Early Negotiations to Halt Nuclear Testing to the Limited Test Ban Treaty of 1963" *Silencing the Bomb: One Scientist's Quest to Halt Nuclear Testing* (New York, Columbia University Press, 2017).

this case, quite literally felt by the “ass” of the spectator—with energetic emanations from beyond.<sup>13</sup>

In “Vento Caldo: The Body in Juan Downey’s Electronic Sculptures” (2010), Carla Macchiavello writes that the significance of Downey’s electronic sculptures can be found within the intimate relationships created between an energetic invisibility from beyond, the human body, and the electronic media facilitating their contact. It was through these works, she writes, that “Downey proposed an interaction between subjects, machines, and their surroundings, a negotiation capable of revealing a space of hybrid and even confusing interfaces among a diversity of bodies.”<sup>14</sup> Important for her analysis is the way these sculptures were never passively viewed, but rather allowed for active, open-ended, technically mediated, and highly participatory aesthetic experiences. That said, I want to zero in on the “confusing” element of Macchiavello’s claim a bit longer than she does, only mentioning it this one time. I believe it gestures to something in these sculptures that cannot be neglected and will become even more pressing later on in light of their historical context. Macchiavello finds these sculptures so compelling because they help actively reveal otherwise invisible relations between a perceiving body, electronic media, and the environment. The analysis of *Radioactive Chair* above would back up this claim to a point. But, the inclusion of the specific energies Downey is working with, as well as from where they might be emanating—something Macchiavello takes less time to do, preferring just “energy” or “energies” in most cases—achieves something different.

In its own potentially “confusing” way, the more attention an analysis gives to the material-energetic specifics of the sculptural situation, the more precise a sense it gives of forces

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<sup>13</sup> Unfortunately, there is no extant documentation to describe just how much *Radioactive Chair* vibrated, or whether its Geiger counter was sensitive enough to ultimately generate any vibrations at all.

<sup>14</sup> Carla Macchiavello, “Vento Caldo: The Body in Juan Downey’s Electronic Sculptures,” in *Juan Downey: el ojo pensante*, exh. cat., ed. Marilys Belt de Downey, 181-91 (Santiago: Fundación Telefónica, 2010), 186.

that ultimately exceed any kind of complete rendering—as the strange quantum nature of electromagnetism helps indicate. Remember that quantum experimentation in the early-twentieth century revealed the electromagnetic field could effortlessly unfold between particle states and wave states, where its matter-form and energy-form were indissolubly linked but differentially expressible.<sup>15</sup> In the *Leonardo* article from earlier, Downey himself states, and Macchiavello partially quotes, the sculptures “create the illusion that the public can participate in the work of art. Actually, we are still spectators mystified by the order that makes the world grow and move, although, we pretend that we are determining what happens to us.”<sup>16</sup> Downey’s statement here is as accurate for his sculptures as it for quantum mechanics.

*Radioactive Chair* assembles together atomic and cosmic scales, human and nonhuman modes of perception, and well-specified energetic forces. This raises the question: How does one make sense of the relations between the potentially cosmic or nuclear forces animating the sculpture and their transduction into a fairly quaint, humanly tangible form? When Downey says this sculpture creates “the illusion” of participation, I suggest he means that while it provides a kind of sensual hint of this lively electromagnetic environment, the hint is only that. Put another way, the hapticity of the sculpture’s vibratory action might be transduced by electromagnetic means, but the resulting sensation fails to capture the fullness of the surrounding force that animates it. This is a situation wherein the physical sensation generated by the sculpture provides little cognitive ground for—and may even get further away from—understanding the energy at work. While it is the vast and mutable field of electromagnetism that activates the sculpture,

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<sup>15</sup> The relevant section of chapter one is “Physics Lost in the Field,” and contains a detailed but accessible history of how the electromagnetic field was figured in the physical imaginary from the early-nineteenth century, until the early twentieth. Especially relevant is how advances in quantum mechanics revealed the elementary particles of the electromagnetic field to be deeply paradoxical in nature. So much so they complicate the very distinction between matter and energy. More on how the quantum can inflect this analysis will follow below.

<sup>16</sup> Downey, “EOAKS,” 403. Quoted in Macchiavello, “Vento Caldo,” 186.

what is only felt is a rumbling in one's rear end. To feel *Radioactive Chair*'s rumble is to brush up against an energy field whose entirety is beyond grasp. This situation catalyzes the mystifying aesthetic experience Downey believed was proper to his electronic sculptures. In conjuring this specified form of electromagnetism into the exhibition space, and making it *partially* sensible, Downey does not unlock its secrets or exhaust its plentitude; rather, he foregrounds it as a simultaneously animating yet confounding presence.

What would it mean to make this mystery or allure the operative dimension of Downey's electronic sculptures, while foregrounding their energetic materiality? I would like to suggest, and I believe Downey would ultimately agree, the unruly force of electromagnetic energy and its transductions seem an especially apt way to play with spectatorial illusion, mystery, and fictions of determination, especially within a 1960s sociotechnical milieu characterized by the promise of endless, actionable information generated by electromagnetic technologies.

### Energy as (a) Conceptual Matter?

To get a better sense of why such a reading of Downey's electronic sculptures is an important contribution to both the study of his art and its historical moment, we must configure these works within their immediate context—the artistic and sociotechnical milieu of the late-1960s. This point in time is actually a microcosm of the genealogical movements we traced in the previous chapter. During these years one finds artists wrestling with the challenges of an energetically and materially lively environment; a sustained interrogation of the outer limits of art's materiality; questions about what media might be suited to expanding art's representational and perceptual

affordances; and, how the pressures of a cybernetic, informationalized, sociotechnical milieu could be aesthetically responded to.<sup>17</sup>

Potentially no other art movement of this time engages these issues more explicitly than North American conceptual art.<sup>18</sup> Those familiar with the contemporary work of Downey know that he created works bearing a strong resemblance to the typical works of North American conceptualism, insofar as they were text on paper, contained charts and diagrams, and interrogated both philosophic problems and the structures of the 1960s artworld—such as his *Aristotle Plato* (1968), *Western Union Telegram* (1968), *A Novel* (1968), *7 Circuits* (1970), and *Research on the Art World* (1970).

Why then read his electronic sculptures in relation to conceptual art rather than those works of his more evidently conceptual? The reason is Downey's electronic sculptures push forward themes and ideas certain conceptual artists were dealing with, just in different media. That is, there are deep resonances between elements of the conceptualist project, to be introduced below, and Downey's sculptural practice. Taking these together despite notable formal differences is meant to foreground the point that similar ideas were taking root during the late-1960s across different artistic media and movements, all enmeshed as they were in the cybernetic, informational lifeworld. This is despite whatever art historical distinctions have been made to hold conceptual art apart from other trends in the 1960s.<sup>19</sup> When cybernetics is made the

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<sup>17</sup> These three concerns map on to the three main sections of chapter one: "Physics Lost in the Field," "Art Capturing Energy," and "Electromagnetism Post-1945" respectively.

<sup>18</sup> I have chosen North American conceptual art because it developed in very close geographical proximity to Downey's own practice. For a more general history of conceptual art, see Alexander Alberro, "Reconsidering Conceptual Art: 1966-1977," in *Conceptual Art: A Critical Anthology*, eds. Alexander Alberro and Blake Stimson, xvi-xxxvii (Cambridge: MIT Press, 1999).

<sup>19</sup> Perhaps the most famous history of conceptual art to be published in *October* was Benjamin Buchloh, "Conceptual Art, 1962-1969: From the Aesthetic of Administration to the Critique of Institutions," *October* 55 (Winter, 1990): 105-145, which went on shape much of the historical discussion on the movement. Buchloh argued the conceptual art could be divided up between those artists—like Art & Language, or Joseph Kosuth—whose work took the issue of medium specificity to its extreme by finding some basic criterion for art itself within the declarative

historical ground, the link between Downey's electronic sculptures and some conceptual art practices appears less tenuous. This set of connections will be fleshed out below with the help of writings from the period and a recent body of literature that treats conceptual art and 1960s media art on similar terms due to their shared historical moment.

We can begin one step away from a very familiar place—Art & Language co-founder Terry Atkinson's critique of Lucy R. Lippard and John Chandler's famous essay "The Dematerialization of Art." Lippard and Chandler's short article went on to frame much of the conversation about conceptual art through its central term of "dematerialization," which the authors use to describe a recent trend of "ultra-conceptual art" wherein "a number of artists are losing interest in the physical evolution of the work of art," a trend that if it continues "may result in the object's becoming wholly obsolete."<sup>20</sup> Lippard and Chandler understand "dematerialization" as foretelling the obsolescence of material objects because they believed that "When works of art, like words, are signs that convey ideas, they are not things in themselves but symbols or representatives of things."<sup>21</sup> This point is especially important because it assumes a mobile transparency inherent within linguistic or textual modes of inscription that operates over and above their material substrates. If a conceptual work of art is just text on a notecard, like Robert Morris' *Cardfile* (1962), then the cellulose and dye of the inked notecards are ancillary to

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statement: "this is art," and thus limiting their work to philosophic speculation; and predominantly European artists like Daniel Buren and Hans Haacke who deployed conceptual and textual strategies to evolve and continue the critical work of their avant-garde forebears, expanding it self-reflexively to the art institutions themselves. Marcel Duchamp's work with the readymade bridges this divide, something explored in the roundtable discussion featuring prominent *October* contributors Benjamin Buchloh, Rosalind Krauss, Alexander Alberro, Thierry de Duve, Martha Buskirk, and Yve-Alain Bois: "Conceptual Art and the Reception of Duchamp." *October* 70: The Duchamp Effect (Autumn, 1994): 126-46. As influential as these histories have been, they rarely broach the informational, cybernetics milieu of the 1960s.

<sup>20</sup> Lucy R. Lippard and John Chandler, "The Dematerialization of Art," in *Conceptual Art: A Critical Anthology*, eds. Alexander Alberro and Blake Stimson (Cambridge, MA: MIT Press, 1999), 46. Originally published in *Art International* 12:2 (February 1968): 31-36.

<sup>21</sup> *Ibid.* 49.



the information they contain: the process of making the work as documented by the artist.<sup>22</sup> The work of art, then, becomes the “idea” represented through a material assemblage whose embodied specifics are dislocated from what is considered to be the “art” itself.<sup>23</sup>

For Atkinson, an exploration of “dematerialization” necessarily entails an invocation of energetic processes and a sustained engagement with a well-defined though expanded materiality. Which is to say, Atkinson believes “dematerialization” is quite specific and Lippard and Chandler’s use of it “has a number of shortcomings in as far as the process of dematerialization is not in any strict sense” what he believes them to be talking about.<sup>24</sup> His critique is important because it introduces the issue of energy to the conversation about conceptual art and dematerialization, and begins to sketch out where a concern for energy might arise within the 1960s conceptualist project. Atkinson continues by invoking the dictionary definition of “dematerialization” and notes that it describes a process whereby all material features of a thing are totally evacuated, leaving no “trace.”<sup>25</sup> This is important because Atkinson

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<sup>22</sup> Importantly, *Cardfile* also comprises a metal case for the notecards, and a wooden board to which the metal case is affixed. This wooden board is then hung on a wall, like a painting. Of course, any deeper analysis of *Cardfile* would have to take these other materials into account, and especially the tension they create with the seemingly documentary or conceptual dimensions the work is seen as foregrounding. *Cardfile* is mentioned here because of its early role in prefiguring central themes within conceptual art. See the *October* roundtable discussion referenced in footnote fifteen above.

<sup>23</sup> “Idea art” has been just one way of describing conceptual art as it was practiced in the United States during the 1960s. Joseph Kosuth famously attaches “(art as idea as idea)” to many of his works at this time, and Sol LeWitt explains that “In conceptual art the idea of concept is the most important aspect of the work. When an artist uses a conceptual form of art, it means that all of the planning and decisions are made beforehand and the execution is a perfunctory affair. The idea becomes a machine that makes the art.” Sol LeWitt, “Paragraphs on Conceptual Art,” in *Conceptual Art: A Critical Anthology*, eds. Alexander Alberro and Blake Stimson (Cambridge: MIT Press, 1999), 12.

<sup>24</sup> Lippard and Chandler’s article was originally published in the February, 1968 issue of *Art International* and Atkinson’s response—originally unpublished—is dated March 23 of that same year. Atkinson’s response was first published in a shortened version dated to March 23, 1968, in the original printing of Lippard’s *Six Years: The Dematerialization of Art* (New York: Praeger, 1972). It was then republished in an expanded state in the edited volume, *Conceptual Art: A Critical Anthology* and immediately follows Lippard and Chandler’s essay, also reprinted therein. This expanded version will be cited in what follows, and the full version, yet unpublished, is archived in the Lucy R. Lippard Papers at the Archives of American Art. This chapter uses the version published in the above anthology. Terry Atkinson, “Concerning the Article ‘The Dematerialization of Art,’” in *Conceptual Art: A Critical Anthology*, eds. Alexander Alberro and Blake Stimson (Cambridge: MIT Press, 1999), 52.

<sup>25</sup> *Ibid.* 53.

takes Lippard and Chandler to still be talking about works of art that do have some form of materiality—just a form deeply attenuated in relation to the traditional materials of art pre-1960. Atkinson explicitly involves energy here when he claims: “It would seem appropriate here to define matter as follows: a specialized form of energy which has the attributes of mass and extension in time, and with which we become acquainted through our bodily senses.”<sup>26</sup> This sets up a continuum where matter and energy differ by degrees of what amounts to condensation or stability, with matter being stabilized or condensed energy that maintains its form over time. The idea being, the closer one gets to the matter side, the more easily sensible the objects or materials become. This implies, however, that while certain points on this continuum might *less* humanly sensible, they do not, by virtue of this, exit the realm of matter and energy and dematerialize into nothing.

I want to suggest that Atkinson here begins to approach something like media at the threshold of materiality—a way of thinking about the media of art and its objects inclusive of invisible energies or highly diffuse matter, like air. This is important because it expands the limit of art’s materiality outside the bounds of human perception. Atkinson understands Lippard and Chandler to still be talking about works of art, just those unlike the “art-object as we know it in its traditional matter-state,” nonetheless still embodied in “matter in one of its forms, either solid-state, gas-state, liquid-state.”<sup>27</sup> This is a promising move, given the way it refines questions of conceptual art’s materiality through recourse to physically specified, if art historically unconventional, forms. Atkinson mentions work he did with Michael Baldwin as part of Art &

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<sup>26</sup> Ibid.

<sup>27</sup> Ibid.

Language to ground this proposed expansion of materiality.<sup>28</sup> It will help move this discussion forward by turning to one example he mentions—their *Air Conditioning Show* of 1966-1967.

Quite in line with Lippard and Chandler's claim that dematerialized art has "not enough to look at," Michael Baldwin himself said of the *Air Conditioning Show* that there was "nothing to see, nothing to do;" and that is partially the point, but it doesn't immediately capture what's at stake here in terms of conceptual art's materiality.<sup>29</sup> On a basic level, exhibitions of the *Air Conditioning Show* are simply empty rooms—insofar as discrete objects are concerned. In his "Remarks on Air-Conditioning: An Extravaganza of Blandness" (1967), Michael Baldwin observes that most exhibitions are dependent upon the arrangement of discrete objects, and that even in "the case of so-called environmental exhibitions... aspects of the discrete arrangement remain" in more distributed forms.<sup>30</sup> What the *Air Conditioning Show* makes clear, according to Baldwin, is that "it is absurd to suggest that spatial considerations are at all bound to the relations of things at a certain level above that of a minimum visibility."<sup>31</sup> This dovetails with Terry Atkinson's earlier claims—conditioned air is simply *imperceptible*, it does not leave zero material trace as they take the term "dematerialization" to suggest.

Conditioned air has a spatial—that is, material or physical—presence. For Art & Language, however, all that presence requires to be meaningfully factored into the art experience is some translation into textual inscription. The materials listed for the work on the Tate Modern's website appear to confirm this: "10 sheets of printed paper, paper cover and detachable

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<sup>28</sup> Ibid. 54

<sup>29</sup> Lippard and Chandler, "Dematerialization," 31; Art & Language (Mel Ramsden, annotated by Michael Baldwin), "Making Art from a Different Place," catalog essay, in Art Gallery of Western Australia, *Ian Burn: Minimal-Conceptual Work, 1965-1970*, exhibition catalog (Perth: Art Gallery of Western Australia, 1992), 12.

<sup>30</sup> Michael Baldwin, "Remarks on Air-Conditioning: An Extravaganza of Blandness," in *Conceptual Art: A Critical Anthology*, eds. Alexander Alberro and Blake Stimson (Cambridge: MIT Press, 1999), 32-33. Originally published in *Arts Magazine*, 42:2 (November 1967): 22-23.

<sup>31</sup> Ibid. 33.

plastic grip.”<sup>32</sup> It seems that printed matter was entirely sufficient as the work’s material, at least from an archival perspective, even while the work appears wholly concerned with what material, if *airy*, limits an exhibition can be pushed to. Unfortunately, here is where Art & Language’s exploration of an expanded, energetically-inclusive materiality begins to limit itself.

The real crux of Art & Language’s critique of Lippard and Chandler is that conceptual art is well-equipped to meditate on unconventional artistic materials—it just requires language, and textual or audio inscription to do so. Unconventional materials like air can enter the conceptual art experience, but the absence of their perceptibility demands a translation into language, and the media of language. This does not, Atkinson believes, warrant the kind of total evacuation of materiality he takes Lippard and Chandler’s “dematerialization” to mean.<sup>33</sup> Rather, Atkinson relocates the issue of conceptual art’s materiality within the domain of recording media. This is still, no doubt, an unconventional expansion of art’s materiality. And it is clear that Art & Language do not embrace totally Lippard and Chandler’s strong-representationalist claim that “When works of art, like words, are signs that convey ideas, they are not things in themselves but symbols or representatives of things,” since Art & Language make the case for a definition of materiality inclusive to, yet and bounded by, the media of textual inscription. It is just surprising that this is where their argument lands despite their provocative invocation of nonrepresentational energetic-materialities and invisibilities. They foreclose the imagining of other material and energetic alternatives at the same time they deploy the rhetoric of those

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<sup>32</sup> It might have been difficult to include any mention of whatever specific “air conditioning” system was at work here, but even the inclusion of “dimensions variable” would have hinted at something within this exhibition that wasn’t capturable in those “10 sheets of printed paper” and whatever information they contain. “*Air Conditioning Show*,” Tate Modern Online Collections, accessed December 13, 2018, <https://www.tate.org.uk/art/artworks/art-language-air-conditioning-show-air-show-frameworks-p80069>

<sup>33</sup> “That some art should be directly material and that other art should produce a material entity only as a necessary by-product of the need to record the idea [the art generates] is not at all to say that the latter is connected by any process of dematerialization to the former.” Atkinson, “Concerning the Article,” 54.

alternatives to make their critique. Which is to say, they miss the opportunity to speculate about a conceptual art exterior to the representationalist constellation of words, signs, and their means of transmission.

This might be because, in the final instance, Art & Language believed the logical extreme of their material-energetic expansion of materiality was a contradictory dead-end if not grounded in some more tangible media form like printed matter. In his critique of Lippard and Chandler, Atkinson suggests that “dematerialization” is most accurately understood as a function of denser forms of matter being converted into “radiant energy,” which “is the only form in which energy can exist in the absence of matter.”<sup>34</sup> The major problem being “if one were to speak of an art-form that used radiant energy, then one would be committed to the contradiction of speaking of a formless form.”<sup>35</sup> Despite Atkinson’s rhetorical deployment of the physical imaginary throughout his critique, and the critique’s reliance on the specificity of terms, there is a sense here where he fails to meet his own criteria.

Light—and its constitutive particle, the photon—is, strictly speaking, the only form of energy that “can exist in the absence of matter” as it has no mass.<sup>36</sup> But this raises a thorny question: Does light’s massless state preclude its formal possibilities? The contemporaneous work of James Turrell, Dan Flavin, Keith Sonnier, or Robert Irwin might suggest it does not. Beyond this, to assume radiant energy begins and ends at light is to simply not take into account the other forms of radiant energies that exist: the disintegration of radioactive isotopes, the warmth produced by human skin, or the signals generated by an electronic sculpture. What each of these instances share is that they are all fundamentally electromagnetic in nature, hence the

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<sup>34</sup> Ibid. 53-54.

<sup>35</sup> Ibid. 54.

<sup>36</sup> The photon is the quanta of light Albert Einstein theorized in 1905 by building off the early quantum research of Max Planck. For more, see the section “Physics Lost in the Field” in chapter one.

importance of a well-specified material-energetic analysis. These other forms of radiant energies both create their own, and interact with other, electromagnetic fields in ways specific to their material composition—which, at the subatomic level, is itself electromagnetic. These are not “formless forms” by any means, nor are they massless (though their mass is, admittedly, mind-bendingly small), but they certainly stretch the material or formal imagination in a way Atkinson appears unwilling to account for. Other artists from this time, however, were—like Robert Barry, who we will discuss later, and most notably Juan Downey. For it was Downey who described electromagnetism as a “radiant nature” composed of “wave-material”—his unique way of invoking the perplexing nature of energy physics Atkinson fails to mention.<sup>37</sup> Radiant energy does have materiality, it simply pushes the limits of materiality as its widely accepted—even by artists most remember for their interrogations of those limits.

That these famous interrogations of materiality undertaken by Lippard and Chandler, or Art & Language, ultimately stop short of taking artistic media to the threshold of materiality—while retaining textual, linguistic, or otherwise representational commitments—is no historical accident. To insist that the media of textual inscription and its *information* are sufficient for the conveyance of meaning—even in the presence of nonrepresentational, energetic-materialities like the air in the *Air Conditioning Show*, or radiant energy—is to reinforce the programs and promises of the cybernetic sociotechnical milieu, and its historical dislocation of materiality. Putting conceptual art in relation to cybernetics is part of a more recent historical reevaluation of the movement that is important to this chapter. Understanding conceptual art as another instance of a broader historical shift during the 1960s towards the enforced separation of information

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<sup>37</sup> Juan Downey, “Architecture, Video, Telepathy: A Communications Utopia,” originally published in *Journal of the Center for Advanced TV Studies* 5, no. 1 (1977), reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 343.

from the materiality of its media makes clear what kind of obstacles there are in thinking conceptual art in materially sensitive and energetically specified terms—even when it appears to ask for it. Remember from the final section of the previous chapter, the epistemology of cybernetics sought to make information its own entity whose potency and capacity to carry meaning were unrelated to this or that material constraint. That was information's promise, and the informationalized, sociotechnical milieu conceptual artists were operating in catalyzed their interrogations of art's materiality, while it simultaneously troubled expanding the definitions of materiality itself outside the representational.

There is a growing body of literature that explores the links between conceptual art and its sociotechnical milieu, and we can look to this recent work to ground the points above. Some notable texts to mention are Edward Shanken's "Art in the Information Age: Technology and Conceptual Art" (2002), and his "Cybernetics and Art: Cultural Convergence" from the same year; Etan J. Ilfeld's "Art and Cybernetics: Waves of Cybernetic Discourse within Conceptual, Video, and New Media Art" (2012); and Ursula Anna Frohne's "Art In-Formation: American Art Under the Impact of New Media Culture," (2013).<sup>38</sup> Frohne sums up this new trend well by explaining that conceptual artists responded to "the widespread and increased accessibility of new communications channels in the mid-twentieth century... [and] began to explore the network structure of technological media," ultimately realizing that conceptual art's "transmissive logic of 'dematerialization' proved to be highly compatible with" the seemingly frictionless vectors of information.<sup>39</sup> Frohne's characterization helps us situate the conceptual art

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<sup>38</sup> Edward Shanken, "Art in the Information Age: Technology and Conceptual Art," *Leonardo* 35, no. 4 (2002), 433-38; Edward Shanken, "Cybernetics and Art: Cultural Convergence in the 1960s," in *From Energy to Information*, eds. Bruce Clarke and Linda Dalrymple Henderson, 255-77 (Palo Alto: Stanford University Press, 2002); Etan J Ilfeld, "Art and Cybernetics: Waves of Cybernetic Discourse within Conceptual, Video, and New Media Art," *Leonardo* 45, no. 1 (2012), 57-63; and Ursula Anna Frohne, "Art In-Formation: American Art under the Impact of New Media Culture" *American Art* 27, no. 2 (2013): 38-43.

<sup>39</sup> Frohne, "Art In-Formation," 38.

discourse of dematerialization in relation to the cybernetic discourse of information. Shanken's "Art in the Information Age" makes a similar claim based on this shared historical moment to treat conceptual art and media art, what he calls "art-and-technology" (and a category more than accurate for Downey's electronic sculptures), as more similar than they are different.<sup>40</sup> In that way, the electronic sculptures' play with energetic materialities, and conceptual art's various invocations of those materialities are rendered as medially distinct means of responding to the same pressure—cybernetics' privileging of the "bodiless fluid" of information.<sup>41</sup>

Different artists across different movements and media responded to this pressure differently. Both Frohne and Shanken cite the popularity of exhibitions like Kynaston McShine's 1970 *Information*, shown at the MoMA, and Jack Burham's *Software*, exhibited that same year at the Jewish Museum in New York, as examples where conceptual art, media art, and a new sociotechnical milieu inflected one another. Both scholars quote Les Levine's artist's statement to the catalog of *Software* as representative of the links within this constellation. For our purposes, it is important to engage with Levine's claim that:

The experience of seeing something first hand is no longer of value in a software controlled society, as anything seen through the media carries just as much energy as first-hand experience... The fact that we can confront them mentally through electronics is sufficient for us to know that they exist... In the same way, most of the art that is produced today ends up as information about art.<sup>42</sup>

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<sup>40</sup> Shanken's definition of art-and-technology is as follows: "Art-and-technology has focused its inquiry on the materials and/or concepts of technology and science, which it recognizes artists have historically incorporated in their work. Its investigations include: (1) the aesthetic examination of the visual forms of science and technology, (2) the application of science and technology in order to create visual forms and (3) the use of scientific concepts and technological media both to question their prescribed applications and to create new aesthetic models." No doubt, one can see how Downey's electronic sculptures fit into this category, and Shanken's work helps further make the case that those sculptures can be read in relation to conceptual art—as they're both responding to the information age in their own ways. Edward Shanken, "Art in the Information Age: Technology and Conceptual Art," *Leonardo* 35, no. 4 (2002), 434.

<sup>41</sup> N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: The University of Chicago Press, 1999), xi.

<sup>42</sup> Les Levine's artist statement in *Software: Information Technology; Its New Meaning for Art* (New York: Jewish Museum, 1970), 61. Quoted from Frohne, "Art In-Formation," 42. Most of this passage is quoted in Shanken, "Art and Information," 434.



New media historian and theorist Wendy Hui Kyong Chun has gone to great lengths to reveal the effects “software controlled society” produces, and her *Programmed Visions: Software and Memory* (2011) is worth briefly mentioning here. As she sees it software “is a universal imitator/machine, it encapsulates a logic of general substitutability” that makes statements like Levine’s conceivable at precisely this point in time.<sup>43</sup> Software, like the idea of information to which it has been historically tied, creates the sense that there resides something within material objects or technologies that both activates them while being distinctly unlike them—something mutable and mobile unaffected by the friction of embodied materiality yet transformative of the forms materiality can take. It is under such an assumption Levine can claim that technically mediated experience possesses “as much energy as first-hand experience,” despite what significant material differences might exist between the two. It hardly bears mentioning what specificity is lost in Levine’s abstraction of “energy” in the singular, but that loss itself is symptomatic of the sociotechnical milieu of the 1960s in which he participated.

The irony here is that the very “electronics” and technical apparatuses Levine must have had in mind are basically electromagnetic in nature—like video and television (mediums in which Levine worked), but also early forms of computing and expanding telecommunication infrastructures. Importantly, however, not all invocations of energy at this time are similarly materially insensitive. Famous technologist Buckminster Fuller, in his foreword to the conceptual art exhibition *Projections: Anti-Materialism* (May 15-July 15, 1970, La Jolla Museum of Art, San Diego) makes clear the role of electromagnetism within this historical

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<sup>43</sup> Wendy Hui Kyong Chun, *Programmed Visions: Software and Memory* (Cambridge: MIT Press, 2011), 2. Chun’s work is a deep historical genealogy of the concept of software and its different articulations over time. Key to her analysis is the idea that though we do appear to live in a “software controlled society,” software itself as a thing is incredibly elusive—visibly invisible, and invisibly visible, as she puts it. *Programmed Visions* is an attempt to excavate the necessary historical conditions of possibility related to software’s emergence and its sociotechnical effects.

moment in a way only he could: “More than 99.9 percent of all the physical and metaphysical events” central to humans’ effective habitability of the planet “transpire within the vast non-sensorial reaches of the electromagnetic spectrum. The main difference between all our yesterdays and today is that man is now intellectually apprehending and usefully employing a large number of those 99.9 percent invisible energetic events.”<sup>44</sup> Fuller’s specification of electromagnetism helps reaffirm our commitment to the issues of invisibility and environmental ubiquity within late-1960s aesthetics. And we can now turn to an artist who embodied that commitment more effectively than most from within conceptual art itself—a participant in *Projections*, Robert Barry.

Let us take a look at Barry’s contributions to another exhibition some time before *Projections* to get sense of his practice: Seth Siegelau’s *January 5-31, 1969* in New York City. Upon entering the exhibition space, viewers would find themselves in a seemingly empty room with nothing to look at.<sup>45</sup> Barry’s contribution to the show’s catalog revealed that, in fact, such an emptiness was actually a function of the inadequacy of human perception. Just a few materials he lists for his exhibited works are as follows: “88 mc Carrier Wave (FM), 1968, 88 megacycles; 5 milliwatts, 9 volt DC battery,” “New York to Luxembourg CB Carrier Wave, January 5–31, 1969, (N.Y. station WR2WER to Luxembourg station LX1DT), 10 meters; 28 megacycles; 180 watts,” and “Microcurie Radiation Installation, January 5, 1969, Barium-133, Central Park, N.Y., 10 year duration (approximate).”<sup>46</sup> In less technical terms, what Barry

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<sup>44</sup> Buckminster Fuller, “Foreword,” in *Projections: Anti-Materialism*, La Jolla Museum of Art, May 15–July 5, 1970, exh. cat. (San Diego: La Jolla Museum of Art, 1970). Excerpt quoted in Lippard, Lucy R. *Six Years: The Dematerialization of the Art Object From 1966 to 1972*. (New York: Praeger, 1973), 165.

<sup>45</sup> The most obviously visible works exhibited at this show were a series of measurement drawings by Mel Bochner, that detailed the dimensions of the exhibition space. Usually inscribed close to where walls met the floor, these weren’t the easiest to see, but were certainly more perceptible than electromagnetic waves.

<sup>46</sup> *January 5–31, 1969*, exh. cat, curated by Seth Siegelau (New York: Self-published, 1969). Quoted from Douglas Kahn, “Robert Barry: Energy and Conceptualism,” in *Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts* (Oakland: University of California Press, 2013), 220.

exhibited were mostly radio wave transmitters tucked away out of view, as well as ultrasound generators unlisted above. The last inclusion, “0.5 Microcurie Radiation,” was composed of a radioactive material buried in central park—to which we will return at the conclusion of this section.

First, though, Barry’s radio works in *January 5-31, 1969* need to be unpacked. Note the specificity with which Barry describes the waves his transmitters generated: their different megacycles and wattage, effectively the specific dimensions of the electromagnetic fields they emitted, as well as their geographic coordinates (“New York to Luxembourg”). It might seem at first that such painstaking attention to inscribing material-energetic detail gels with the catalog’s assertion that “The exhibition consists of (the ideas communicated in) the catalog: the physical presence (of the work) is supplementary to the catalog.”<sup>47</sup> However, Barry himself complicates this supplementarity of physical presence in “Four Conversations with Arthur Rose” in the February, 1969 issue of the magazine *Arts*.

It is there he explains that his “use of a material which is invisible, or at least not perceivable in a traditional way... poses problems [but] it also presents endless possibilities. It was at this point that I discarded the idea that art is necessarily something to look at,” adding “I’m not only questioning the limits of our perception, but the actual nature of perception.”<sup>48</sup> Importantly, this is different from saying—per Art & Language—that art requires a textual supplement to make sense of challenging, imperceptible yet environmental forces. For Barry “These forms certainly exist, they are controlled and have their own characteristics. They are

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<sup>47</sup> *January 5–31, 1969*, exh. cat, curated by Seth Siegelaub (New York: Self-published, 1969), excerpt quoted in Lippard, *Six Years: The Dematerialization of the Art Object from 1966 to 1972* (original publication, New York: Praeger, 1972; republication, Berkeley: University of California Press, 2001), 71.

<sup>48</sup> “A Conversation with Arthur Rose,” *Arts*, February, 1969 (with Barry, Huebler, Kosuth, Weiner), excerpt quoted in Lippard, *Six Years*, 72.

made of various kinds of energy which exist outside the narrow arbitrary limits of our own senses. I use various devices to produce the energy, detect it, measure it, and define its form.”<sup>49</sup> When asked in response to this statement: “exactly what kind of energy do you use?” Barry replies “electromagnetic waves.”<sup>50</sup> Barry was clearly thinking closely with a well-specified energetic source, and realized its effects were not exclusively conceptual, but *perceptual*, and that the two mutually inflected one another. To use electromagnetic energy was not, for Barry, to evacuate a materiality that could only then be supplemented and made sufficient through text (though it nonetheless found its way on the page); but rather, to speculate about what kinds of energetic materiality might exist outside human perceptual capacities, and what was at stake in the production, detection, measurement, and definition of the invisible.<sup>51</sup>

It is important to mention that Barry has received recent critical attention for his introduction of energy into conceptual art, most notably from Douglas Kahn in his *Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts* (2013) and James Nisbet in his *Ecologies, Environments, and Energy Systems in the Art of the 1960s and 1970s* (2014). Kahn is especially interested in Barry since his own discussion of electromagnetism in the arts revolves around its aural manifestations and relation to communication technologies. Kahn makes sure to point out that Barry’s father was a radio engineer and actually helped him put together many of the transmitters exhibited in *January 5-31, 1969*.<sup>52</sup> Kahn reminds us “that Barry did not think of his energy-related works as antimaterial or immaterial. His works were immaterial only if conventional art objects were a measure of materiality, and such designation was for Barry

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<sup>49</sup> Ibid.

<sup>50</sup> Ibid.

<sup>51</sup> Barry concludes this interview by saying: “There are many other possibilities which I intend to explore—I’m sure there are a lot of things we don’t yet know about, which exist in the space around us, and, though we don’t see or feel them, we somehow know they are out there.”<sup>51</sup> This supra-sensible, speculative dimension of Barry’s statement will become central in what follows, especially when we return to the aesthetics of OOO.

<sup>52</sup> Kahn, “Robert Barry,” 222.

entirely arbitrary.”<sup>53</sup> This claim is important because it reaffirms an expanded sense of materiality, rather than a deemphasis of it, within the history of conceptual art. But it is James Nisbet who explicitly frames Barry in relation to the material/immaterial/dematerial transformations initiated by cybernetics and how artists attempted to make sense of them during the late-1960s.

Nisbet’s text is a historical evaluation of the art of the 1960s and 1970s through the lens of ecology, environment, and—importantly for us—energy, which makes Barry a central artist for his analysis. Nisbet sees Barry as one of the few artists from this time to realize that “that material transformations of energy are themselves a means of communication. That is, energy is a form of information.”<sup>54</sup> Here we have a Barry situated within constellation of energy, communication, and information that is worth unpacking. In Nisbet’s claim it appears that in making “the material transformations of energy” a “means of communication,” energy becomes “a form of information.” This supposes that the contents of communication, whatever gets exchanged, or transferred from point A to point B is equivalent to information, putting an emphasis on transmission that is familiar to us throughout this chapter. Which is to say, Nisbet’s initial rendering of Barry owes something to the historical frame of cybernetics.

Nisbet specifies this cybernetic connection between energy, communication, and information in Barry’s works by linking his practice to the theories of English anthropologist and cyberneticist Gregory Bateson.<sup>55</sup> It is in this way the “material transformations of energy” are more appropriately casted as a form of information. This is because Nisbet sees Bateson as

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<sup>53</sup> Ibid. 223.

<sup>54</sup> James Nisbet, *Ecologies, Environments, and Energy Systems in Art of the 1960s and 1970s* (Cambridge: MIT Press, 2014), 153.

<sup>55</sup> Bateson would go on to publish in the popular video art magazine *Radical Software* (1970-1974), in which Downey himself published several articles. Downey’s relation to *Radical Software* will be explored in the following chapter.

helping us dismantle “the barriers through which we understand ‘information’ as an interior and subjective category and in its place proposes that information is instead bound to the shared movement of energy throughout various levels of ecosystems...” an idea “that had begun surfacing in a number of artistic practices that engaged with energetics: the idea that information is a material act predicated on its own propagation.”<sup>56</sup> With Bateson, information is defined less as pure content operating above its material embodiments, and more as something integrated with those embodiments and their environmental embeddedness. Nisbet sees Barry’s practice as especially evocative of this idea, suggesting that his radio wave installations “propose that energy exchange is the very ground upon which the formulation of such messages and meanings occur,” even prior to the concerns of content or even legibility.<sup>57</sup> This is critical as it links the energies of electromagnetism within Barry’s works to the contemporary transformations of information—rather than holding those energies apart from a more dematerialized vision of what information was discussed above.

Though, even if we update information with the help of Bateson and Barry via Nisbet, I want to ask: What are the implications of retaining a cybernetic-informational model—however more inclusive and transformed it might be from its earlier iterations—in relation to these works and their environmental energetic-materialities? What does tying these works and their energies to information achieve?

At base, I want to suggest that the historical emergence of information cannot be dissociated from the cybernetic impetus of capture and control. In making something information—like the energies of an environment or the movements of a population—it becomes legible within the epistemic frame of cybernetics’ drive towards capture and control. To specify

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<sup>56</sup> Nisbet, *Ecologies, Environments, and Energy Systems*, 160.

<sup>57</sup> *Ibid.* 156.

what I mean by control, we can look at the historical shift Gilles Deleuze articulates in his “Postscript on the Societies of Control.” There he warns that “the conception of a control mechanism, giving the position of any element within an open environment at any instant... is not necessarily one of science fiction.”<sup>58</sup> Key to Deleuze’s idea of control is a distinction between it and the Foucauldian notion of discipline. Whereas discipline operates on the surveillance of the subject in compartmentalized spaces—like the prison or barracks—allowing them to internalize the panoptic gaze and discipline themselves, control is markedly different. Control is built into “the open environment” and trades the discretization of discipline for a continuous modulation that can happen almost anywhere. Control is reinforced through that process of “giving the position of any element within” a given space, either through technologies of facial recognition or GPS in the present day.

I wonder whether or not the Batesonian broadening of the concept of information to include the material transformations of energy within an environment inadvertently participates in this dilation of control logic to include ever larger and more open spaces. It is almost as if Batesonian cybernetics specifically haunts the image Deleuze offers us above by having introduced an understanding of information especially sensitive to the environmental circulations of lifeforms and energies. Set against this historical ground of cybernetic capture and control, I want to ask whether or not the works discussed above are best understood through the informational capture of environments and their energies? What would it mean to insist they are not, and what other alternatives are there? These questions are central to identifying those interpretative possibilities a material-energetic reading can generate in relation to late-1960s art outside the cybernetic frame.

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<sup>58</sup> Gilles Deleuze, “Postscript on the Societies of Control,” *October* 59 (Winter, 1992), 7.

Think back to the last inclusion Robert Barry made to the *January 5-31, 1969* exhibition catalog: “0.5 Microcurie Radiation Installation, January 5, 1969, Barium-133, Central Park, N.Y., 10 year duration (approximate).”<sup>59</sup> The exact location of the Barium-133 is unknown and to this day it remains somewhere in central park. And to this day, its subatomic structure is continually disintegrating, losing half of its atoms every ten years—the duration of what is called in atomic physics its “half-life.” Discussing that work in a conversation with Ursula Meyer, Barry notes something strange: like all radioactive materials, his installation’s half-life “*never goes out of existence*” and this perpetuity is what initially drew him to these substances.<sup>60</sup> This is difficult to understand at first but worth unpacking. There is an inherent instability within radioactive material due to an excess of electromagnetic charge.<sup>61</sup> Particles irradiate away in a process of decomposition and recomposition towards more stable matter at a pace specific to the radioactive object itself. The half-life marks how much time it initially takes for a radioactive substance to lose half of its atoms. The thing is however, for every half-life interval a smaller amount of atoms decay, and given the nearly incomprehensible number of atoms in even the smallest objects or quantities of substances, half-lives can go to practical infinity. It is—and this is something Kahn gestures to as well—like Zeno’s Dichotomy Paradox: that in traveling anywhere one must first travel half the distance, and then the half of that half, and so on to an

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<sup>59</sup> *January 5–31, 1969*, exh. cat, curated by Seth Siegelaub (New York: Self-published, 1969). Quoted from Douglas Kahn, “Robert Barry: Energy and Conceptualism,” in *Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts* (Oakland: University of California Press, 2013), 220.

<sup>60</sup> “‘Now the ‘half-life’ in this particular case was ten years, which means that every ten years its energy is decreased by half; but it goes on to infinity, it never goes to nothing. Some isotopes have a half-life of a millionth of a second, some have a half-life of four billion years and some of fifteen minutes: i.e., every fifteen seconds [sic] the energy is halved. *But it never goes out of existence.*” Robert Barry quoted in Ursula Meyer, “Robert Barry, October 12, 1969,” in *Conceptual Art* (New York: Dutton, 1972), 38. Italics in the original.

<sup>61</sup> This excess generates one of three forms of decay (alpha, beta, or gamma) within a radioactive material’s atomic structure as its elementary particles struggle to find energetic equilibrium. The specifics of these kinds of decay differ, but delineating between them isn’t necessary for the present purposes.



infinity defined by infinitesimally smaller halves.<sup>62</sup> Put yet another way, radioactive decay is like an asymptote. An asymptote is a graphical representation defined by the continual approach of a curve towards an X or Y axis that ultimately never makes contact—the distance gets smaller and smaller but never reaches zero. The point is atomic disintegration, like asymptotes, or even irrational numbers for that matter, are incompressible or irreducible. Not only does Barry's Barium-133 installation gives us a clear sense of the incompressibility of a well-specified energetic materiality, it is that irreducibility which drew him to it. "Every once in a while the mind breaks down and infinity rushes in," Barry tells Meyer, and it seems he found a substance to demonstrate this.<sup>63</sup>

We must now ask: Is there not some tension between the dictates of the cybernetic drive towards informationalization, and the incompressibility of Barry's radioactive installation. Even the fact we do not know exactly where it is seems to suggest that something integral to this work escapes from a meaningful, actionable, transformation into information. Indeed, Barry's *Inert Gas Series/Helium, Neon, Argon, Krypton, Xenon/From a Measured Volume to Indefinite Expansion* (1969), performs a similar exceeding of capture and control. In that work, Barry released small quantities of harmless gases into the air around Los Angeles. The gases are invisible, and by their very nature they continually expand to fit the volume in which they are in—in this case, the gaseous envelop of planet Earth. There is no tracking these gases once they are released, and they are in no real way *in-form*, unless we expand the notion of information to account for all conceivable molecular movements of our atmosphere. And I want to suggest that is the point. Barry seems to understand the limits of information, and that a material-energetic aesthetic practice could indeed, rather than reinforcing the historical drive towards cybernetic

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<sup>62</sup> Kahn, *Earth Sound Earth Signal*, 226.

<sup>63</sup> Meyer, "Barry, October 12," 40.

capture and control, signal its inadequacy. That is, these two works stage a *withdraw* from the aims of their historical context by virtue of what kind of special objects they are. And it is to this notion of withdrawal we can now turn, and from there, explore in detail how Downey's electronic sculptures perform it and towards what ends.

### An Art of (and as) Withdrawal

The idea of withdrawal is central to the recent philosophic trend of Object-Oriented Ontology (OOO). OOO is part of a turn in contemporary philosophy towards “speculative realism,” which is characterized by a general complication of Immanuel Kant's assertion that knowing any “thing-in-itself” is forever foreclosed because humans can only know something on the grounds of it being specifically correlated with their cognitive and perceptual modes of accessing the world (modes that are subsequently privileged above all others and mark the outer limits of traditional, Western philosophic investigation). A forerunner of speculative realism, French philosopher Quentin Meillassoux, describes this pillar of Kant's thought as *correlationism*.<sup>64</sup> Though speculative realism is internally differentiated, and even provides conflicting approaches to correlationism, it coalesces in the belief of and an attraction towards the philosophic potentials of exploring mind-independent reality.<sup>65</sup>

American OOO philosopher Graham Harman's take on correlationism is especially important here, and will frame the rest of this section. Interestingly, and contra someone like Meillassoux, Harman accepts Kant's idea that objects are forever inaccessible—what is called

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<sup>64</sup> For more on this term see Quentin Meillassoux, *After Finitude: An Essay on the Necessity of Contingency*, trans. Ray Brassier (London: Continuum, 2008).

<sup>65</sup> For more on the speculative turn, one can look to an early collection of essays edited by Levi Bryant, Nick Srnicek, and Graham Harman, *The Speculative Turn: Continental Materialism and Realism* (Melbourne: re.press, 2011). The wide array of contributors, and responses between contributors, makes this volume a valuable, introductory resource for those interested.

“Kantian finitude”—but believes they are not inaccessible to the human mind alone. For Harman, Kant’s mistake was to treat finitude as an exclusive function of human psychological, cognitive, and linguistic “peculiarities,” whereas, instead, Harman argues “we’re finite because any relation between any two things does not exhaust the relata.”<sup>66</sup> Which is to say, differently, every object exists in a fundamental state of withdrawal from all other objects—“they never touch,” as Harman puts it. Harman retains the “thing-in-itself” and extends Kantian finitude outward as the basic condition of all objects—both real and imagined—rather than making it the exclusive function of the lopsided “human-world” relation.<sup>67</sup>

To claim this is to further claim, as Harman does, that we can only ever have indirect access to the objects constituting the world. In “The Third Table,” one of the first essays to think OOO and aesthetics together, Harman explains as much and it is worth quoting at length.

Just as erotic speech works when composed of hint, allusion, and innuendo rather than declarative statements and clearly articulated propositions, and just as jokes or magic tricks are easily ruined when each of their steps is explained, thinking is not thinking unless it realizes that its approach to objects can only be oblique. We cannot be downward scientific reducers, nor can we be upward humanistic reducers. We can only be *hunters of objects*, and must even be non-lethal hunters, since objects can never be caught. The world is filled primarily not with electrons or human praxis, but with ghostly objects withdrawing from all human and inhuman access, accessible only by allusion and seducing us by means of *allure*.<sup>68</sup>

This invocation of “allusion” and “allure” is especially important for the present purposes. While the idea of an object’s withdraw might have the connotation of a negative imperviousness to it, the flipside of this is the abundance of allusion and the seduction of allure. The full reality of any object is inaccessible, according to Harman, but that “molten core” animates the sensual profiles

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<sup>66</sup> Graham Harman, “Black Holes,” filmed in 2014 at the European Graduate School, Saas-Fee, Switzerland, video, 25:22, [https://www.youtube.com/watch?v=p1\\_R-Zbv5G4&t=2242s](https://www.youtube.com/watch?v=p1_R-Zbv5G4&t=2242s)

<sup>67</sup> To clarify Harman’s conception of objects, in “The Third Table,” he explains “First, philosophy must deal with every type of object rather than reducing all objects to one privileged type: zebras, leprechauns, and armies are just as worthy of philosophical discussion as atoms and brains.” Graham Harman, *The Third Table* (Berlin: Hatje Cantz, 2012), 4.

<sup>68</sup> *Ibid.* 12

of an object. This relation is allusive in the sense that the multitude of sensual experiences one can have with an object only ever exist in indirect relation to the object's underlying reality. Allure enters the picture in special cases when there exists a tension, or "duel," between the sensual profile of a thing and what lies beneath it. In daily experience we often collapse the traits of an object and the object itself together, but in cases of allure the situation is more arresting—one becomes struck by a thing and feels a sort of hidden power operating beneath its sensual existence.<sup>69</sup> Later on, I will demonstrate how Downey's electronic sculptures help us better understand the terms of withdraw, allusion, and allure.

Before doing so, I want to address another kind of tension between—this time between the theoretical claims of OOO and the methodology I have tried to develop in this dissertation. One of the main contributions of this thesis is its deployment of the terms, histories, and concepts of physics to better articulate the elements of energetically-specified and materially-sensitive aesthetic strategies, like Barry's but especially Downey's. At first glance, this appears similar to what Harman describes as "undermining," the kind of scientific reduction that hypostasizes objects as all that is explainable through invocations of the electromagnetic field, quantum mechanics, or atomic physics. And while the presence of physics in this dissertation might seem outsized in relation to other art historical texts, it is not a reductive presence. Rather, it is meant to give a clearer sense of that which resists reduction. Even with Barry's *Barium-133* and *Inert Gas* installation, attention to the works' physical properties—like the disintegration of radioactive materials or the diffusion gaseous matter—means to highlight how these works

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<sup>69</sup> Harman finds the structure of allure to be "the key phenomenon of all the arts." Graham Harman, "The Well Wrought Broken Hammer: Object-Oriented Literary Criticism," *New Literary History* 43, no. 2 (Spring 2012): 188. The experience of beauty is an example he uses to further explain the concept: "a similar cutting of the bond between an agent and its traits occurs in beauty, in which a thing or creature is gifted with qualities of such overwhelming force that we do not pass directly through the sensual material into the unified thing, but seem to see the beautiful entity lying beneath all its marvelous qualities, commanding them like puppets." Graham Harman, *Guerilla Metaphysics: Phenomenology and the Carpentry of Things* (Chicago: Open Court, 2005), 142.

ultimately recede from any kind of complete picture. Similarly, as we will soon see in the detailed engagement with more of Downey's electronic sculptures, all the attention to their energetic specificities and material sensitivities aims at a more detailed account of what is ungraspable in these works, and how they open onto aesthetic situations that are necessarily ongoing.

In what follows, physically precise attention to that ongoingness or incompleteness is read again alongside more literature on Downey's electronic sculptures, which share an attention to the historical influences of his contemporary moment. The goal in the proceeding analysis is to demonstrate that, paradoxically, the more precisely we attend to their energetic materialities, the more we realize these works stage such materialities' withdrawal from human and technical modes of access. This is important *because* of Downey's place within history and the influences he was responding to, which is why that dimension of the current scholarship is so critical to what follows—if only one piece of the puzzle. Taken together, what we get closer to is realizing how an artist in the late-1960s, deeply embedded in cybernetic assemblages of control, makes clear what such assemblages fail to capture—or make into information—and how.

### Sculpture in the Electromagnetic Field: A Second Look

As a preliminary note, it bears mentioning that before Downey began focusing on his electronic sculptures in 1967, he had been painting, drawing, and etching for almost a decade prior. The variety in this body of two-dimensional work deserves its own analysis, but there is little room for it here. Some of these works are entirely abstract, others depict cyborg forms with anatomical precision and sexual undertones, and yet others—starting in 1966—can be seen as preparatory studies for his as yet unrealized sculptural practice. As those drawings evolved, they became

more intricate, the angles of their forms more precise, and their imagined three-dimensionality more articulate. He was clearly working through something. *Comunicación entre tres cuerpos: magnetismo, célula fotoeléctrica, sonido* (Communication Between Three Bodies: Magnetism, Photoelectric Cell, Sound) [fig. 3] is the first of Downey's drawings to explicitly diagram the interaction of different kinds of energies in an imagined sculptural assemblage. Shortly thereafter, Downey gave a name to another of these drawings that explicitly identifies what would become a definitive theme for this early phase of work: *Invisible Communication Between Four Different Sculptures*.

We know from our time with *Radioactive Chair* Downey's electronic sculptures introduce invisible energies via the sculptures themselves into the exhibition space and make them newly perceivable. But we must remember this process is by no means exhaustive, and that, actually, according to Downey, these sculptures create "the illusion" of participation. For him there is a crucial element of mystery within these works. We need to get a closer look at a couple more of these sculptures to ground this claim.

Take for example *A Machine with Three Conditions* [fig. 4], also referenced by the artist in his *Leonardo* article.<sup>70</sup> Using a formal vocabulary similar to *Radioactive Chair* and most of the other electronic sculptures, *A Machine with Three Conditions* is composed of boxy white forms—a large, vertical, rectangular base atop which rests a horizontal, rectangular box. From the top of this box protrudes a single antenna; on one of its shorter sides there is a circular detector one can place their hand on; and perpendicular to that surface on the box's longer side there is an opening for a projector. Though the materials listed for this work only describe "electronic parts" apart from its plywood and Formica construction, we know it contained at

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<sup>70</sup> Yet another of Downey's electronic sculptures that was destroyed.

least a radio receiver, a device to playback recorded sound, a mechanism to trigger that sound, and devices to both detect and generate light, all mostly concealed with the exception of the antenna.<sup>71</sup> Downey describes the sculpture's titular three conditions as (1) if someone touches the circular detector, the sculpture will say over and over again "someone is touching me;" (2) if the room becomes dark enough, the sculpture will say over and over again "the room is dark enough;" and (3) if the receiver picks up an unspecified radio wave, it will make it audible; additionally, if all three conditions are met simultaneously, the box produces light and sound.<sup>72</sup> Downey explains, "The machine, somewhat like the brain, selects and receives an input, adds it up and then produces an output."<sup>73</sup> Again, though differently, the tone of Downey's description appears at odds with the sculpture itself. That is, the computational neatness of the reception, addition, and production of output based on three conditions doesn't quite capture the strangeness of the sculptural situation.<sup>74</sup>

Let us take the sculpture's three conditions in turn. The first condition: that the sculpture lets spectators know when it is being touched, and refers to itself as a "me," implying some degree of subjectivity, creates a tension between its obvious inanimacy and its imagined intelligence and self-awareness. What more can this "me" tell us other than it has made contact

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<sup>71</sup> Many of the quoted descriptions of the materials of Downey's electronic sculptures come from the edited volume *Juan Downey: 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019). This is the very first text to assemble together all of Juan Downey's works across different media, as well as his own writings. Scholarly engagements with his practice are included as well and cited throughout this dissertation.

<sup>72</sup> Downey, "EOAKS," 404-05.

<sup>73</sup> Ibid. 404.

<sup>74</sup> That Downey describes the brain as a computational entity is another instance of him trafficking in the language of cybernetics, as it was cybernetic thinkers like Warren McColluch and Walter Pitts who worked to render the brain as beholden to computational logic. For more on cybernetics' influence on the conceptualization of the brain one could look to the chapter "Rationalizing: Cognition, Time, and Logic in the Social and Behavioral Sciences," in Orit Halpern, *Beautiful Data: A History of Vision and Reason Since 1945* (Durham: Duke University Press, 2014), 145-197. It's a deep historical study of how certain, cybernetics predispositions towards quantitative methods found their way into brain science, and rendered the brain itself much a logic machine, with the firings of its neurons acting like on/off switches describable in logical terms.

with the hand of a spectator? As per the second condition, the sculpture will repeat constantly “the room is dark enough” when the level of visible light in its vicinity has reached a predetermined point. We don’t really know what that level is, only that, in the sculpture’s *own* words, it is “enough.” The fuzziness of “enough” as descriptor is the point. What kind of mood lighting is preferred by photosensitive, speaking sculptures? And how much more, or less, refined is its sensitivity to visible light on the electromagnetic spectrum as compared to those (humans) the sculpture is ostensibly speaking to? Silly as these questions might be, it is no accident that the sculpture provides the grounds to ask them. Condition three appears a bit more straightforward, insofar as once a certain radio frequency is detected the sculpture will make it audible. But we cannot be sure what frequency it was. Was it a WAMU, the popular public radio station from American University located in Washington D.C. where the sculpture was first exhibited? Was it a military or police communications channel, or one chosen specifically for the textures of its static—an opportunity Downey might have taken to invite atmospheric noise into the sculptural situation? Even if we knew exactly what frequency Downey chose, there is no guarantee that at some point during the sculpture’s exhibition, it wasn’t overridden by a stronger radio wave and suffered incomprehensible interference, a simple technical malfunction on the sender’s part leading to dead air, or even more intense electromagnetic interference from heightened solar activity.

These speculations are important because they gesture to the indeterminacy of the sculptural experience for spectators—the condition of possibility for the “confusing interfaces among a diversity of bodies” Macchiavello rightly indicated in her analysis. But we still must keep in mind Downey’s claim about illusion and mystery here, as almost a caution against a more generously participative reading. Indeed, apart from the movement of one’s hand,



spectators would have very little control over what kinds of material and energetic events this sculpture communes with and makes perceivable. Moreover, and maybe more importantly, this indeterminacy and illusion emerge from the sculpture's electromagnetic detections and sensations. Its contact with a multi-scalar, energetic surround is what animates it and yet reaches so far beyond it in a single move. That is, the sculpture can never exhaust the fullness of that surround, meaning the breadth of this sculptural experience remains fundamentally unknowable or ongoing, which tracks well with Downey's assertion that we are "still spectators mystified by the order that makes the world grow and move."<sup>75</sup> In that way, maybe *A Machine with Three Conditions* is, as Downey claims, "somewhat like a brain," but only if we discard a clean input/output model and accept the messiness of the brain's opaque, electrochemical functions and the consciousness that inscrutably emerges from them. On this count, that the sculpture emits light and sound at the triggering of all three conditions attests to something like a cerebral spasm, an overload of stimuli paralyzing our grey matter's functioning. Maybe the sculpture-as-brain experienced what Barry described to Ursula Meyer just a year later: "Every once in a while the mind breaks down and infinity rushes in."<sup>76</sup> An electromagnetic infinity to be sure.

In the face of a vast energetic surround, Downey also claims these electronic sculptures "cause people to play" and that "children like them."<sup>77</sup> This can actually bring us closer to something like their performance of energetic withdrawal, but that is not how it has been read in current literature—notably by Ciara Ennis in her "The Politics of Play in the Early Work of Juan Downey" (2017). Ennis' text zeroes in on the conditions of participation created by Downey's sculptures—similar to ones we have outlined thus far—such as their open-endedness and

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<sup>75</sup> Downey, "EOAKS," 403.

<sup>76</sup> Meyer, "Barry, October 12," 40.

<sup>77</sup> Downey, "EOAKS," 403, 405.

activation of the spectator. Similarly to Macchiavello, Ennis doesn't articulate what kinds of energies are responsible for allowing this playful participation to take place. What Ennis does do quite well, however, is identify the political stakes of including play into an advanced media art practice during the late-1960s.<sup>78</sup> The importance of Downey's work from this angle lies in "[a] rejection of didacticism in favor of alternative aesthetic models," which Ennis reads alongside "Jacques Rancière's critique of political art."<sup>79</sup> Ennis continues:

According to Rancière, as a socially agreed upon set of rules that are both produced and propped up by the art industry, aesthetics can only reflect the dominant ideologies of the hegemon. In order to challenge these ideologies, artists must reconfigure the coordinates of the perceptual system so that new practices and ideas can surface: 'images change our gaze and the landscape of the possible if they are not anticipated by their meaning and do not anticipate their effects.' Downey's work does this by positioning the viewer as central to his works' subjects as well as their meaning.<sup>80</sup>

And while I agree on the political edge of Downey's attempts to centralize an active and playful "viewer" within the crux of his work at this time, I don't think the "viewer," as Ennis describes them, is the only operative, playful element in these works, nor is it the only way to describe those that come into contact with these sculptures. To be sure, any reading of Downey's art that centralizes an activated viewer, however politically charged or participatively emancipated, while leaving out the energies that make them *more* than "viewers" through immersion in a suprasensible energetic environment, risks eliding what make these sculptures unique.

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<sup>78</sup> "Conceived as a means to loosen ties with existing artistic paradigms, for Downey, play has the capacity to strip away the conventional rules encoded in the viewing experience by injecting unalloyed pleasure into the activity" contra more serious modes of aesthetic contemplation circulating within the criticism of painting and sculpture at the time. Ciara Ennis, "The Politics of Play in the Early Work of Juan Downey," in *Juan Downey: Radiant Nature*, exh. cat., organized by Robert Crouch and Ciara Ennis (Los Angeles: Pitzer College Art Galleries and Los Angeles Contemporary Exhibitions, 2017), 52-3. Michael Fried's famous critique of "theatricality" in "Art and Objecthood" was published the same year, 1967, Downey set off to make his electronic sculptures. See Michael Fried, "Art and Objecthood," in *Art and Objecthood: Essays and Reviews* (Chicago: The University of Chicago Press). Downey himself notes in the *Leonardo* article that "painters and sculptors have responded negatively, with rare exceptions, [to his electronic sculptures] for they say that what I do is not art...!" Downey, "EOAKS," 406.

<sup>79</sup> Ibid. 59.

<sup>80</sup> Ibid. with a quotation from Jacques Rancière, "The Intolerable Image," in *The Emancipated Spectator* (London and New York: Verso, 2011), 105.

To participate in Downey's electronic sculptures is to find oneself in an experience that by its very material-energetic nature creates only the illusion of participation, as Downey himself wrote. Another way to think this illusion is to understand the electronic sculptures as providing a kind of sensual hint—like the rumble of *Radioactive Chair*, for instance—at an underlying, electromagnetic reality. The key point being, as with the concept of allure, that sensual hint can only ever be a seductive intimation of what lies beneath and yet animates it. Spectators might feel as though they are participating with an energetic beyond within the confines of the sculptural situation, though Downey regards this as illusory. And I suggest that illusory nature is fleshed out by the sculpture's material-energetic nature. To invoke electromagnetism in this way is to surround spectators in a real-life force field over which they can just barely grasp at, a force-field they have no more control over than the electromagnetic envelope of the planet. On that count, the issue of play—now understood as a kind of lack of control—remains as crucial as Ennis claims, if just less centered in the human and humanly perceptible.

To drive these points home, let us take another extended look at one of Downey's electronic sculptures—the beautifully titled *With Energy Beyond These Walls* (1969), [fig. 5]. Like *Radioactive Chair*, *With Energy Beyond These Walls* has two major components described as “volumes” in a detailed preparatory drawing completed the same year. The first volume, unlike his other electronic sculptures, reveals its internal components through a Plexiglas cover atop a horizontal rectangular base affixed to another, vertically-oriented rectangular pedestal—tangles of wires and an array of lightbulbs can be seen inside. The second volume is smaller, to be placed on the floor unconnected by any visible forms to the first, and appears as a simple white cube. Like *A Machine with Three Conditions*, *With Energy* has an open-ended functionality. The first volume is able to detect a host of invisible energies such as atomic

disintegration, short length radio waves, longer length radio waves, radar waves, and its own internally generated heat. Upon detection, each of these specified energies will trigger a corresponding tone in an electric organ housed in the second volume, and all can be triggered simultaneously. In the absence of any *energy beyond its walls*, volume one will transmit a radio signal to volume two, allowing it to generate some basic level of noise.

It is important that *With Energy*'s electronic components are sensitive enough to register electromagnetic fields operating at different frequencies, and can translate those fields into distinct, sonically perceptible forms. Entering its space, spectators would find themselves in an aural environment intended to make palpable the mostly insensible energetic environment that always already surrounds them—a kind of translation of ambient energies into more felt perceptions. We would do well to focus on a sound a bit more here, precisely because it is “felt” as well as heard.

Media art historian and theorist Frances Dyson explains this point in her *Sounding New Media: Immersion and Embodiment in the Arts and Culture* (2009). For her, “the field of sound is not a chunk of divisible being, but is more like a state or quality, surrounding the listener, who is simultaneously hearing and being touched by the vibrating, engulfing, sonic atmosphere.”<sup>81</sup> It might be that Downey's electromagnetically generated sound is meant to give spectators a more perceptually grounded sense of an energetic environment that is already there, and already making less sensible contact with their bodies. And while sound might perform a revealing function of that which cannot be as easily sensed, though is no less present, it is only ever a sensual hint. That felt gesture seems a basic feature of all the electronic sculptures' energetic

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<sup>81</sup> Frances Dyson, *Sounding New Media: Sounding New Media: Immersion and Embodiment in the Arts and Culture* (Berkeley: University of California Press, 2009), 120.

disclosures, which is what generates an alluring tension between how well-specified the sculptures' energetic existence is, and how withdrawn its energies actually are.

Although our novel inclusion of OOO withdrawal destabilizes the role of participation in the electronic sculptures, our analysis is not the first to critique the spectator-as-participant within these works, even in relation to *With Energy Beyond These Walls*. Felicity D. Scott's essay "Nothing is a Closed Circuit" (2019) is similarly concerned with interrogating the primacy of participation within Downey's early practice and finds *With Energy* an especially illustrative means to do so. Importantly, it will be crucial to delineate our reasons for why in respect to Scott's. She begins her essay by warning that "we should not mistake the gesture of rendering a sculpture's electronic components visible [through the Plexiglas cover] for an appeal to transparency or immediacy."<sup>82</sup> Instead, for Scott, Downey's work critically marks out the ways in which an easy identification between what is inside an artwork—like its electronic components—and what is outside an artwork—like the institutional dictates of exhibition spaces or its broader, informationalized, sociotechnical milieu—are never clean. That is, she sees his electronic sculptures as working towards the "modulation of what was rendered perceptible within an artwork or space and what was invisible, encrypted, or deferred; [and the] allegorizing of the distributed and technically mediated apparatus of power within which art, architecture, and bodies were necessarily imbricated."<sup>83</sup> That "apparatus of power" is the cybernetic paradigm of capture and control, and this focus on modulation should remind the reader of the earlier invocation of Deleuze and his explanation of the control society. In these ways, Scott places Downey in a much more ambiguous relationship to cybernetics than has often been done.

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<sup>82</sup> Felicity D Scott, "Nothing is a Closed Circuit," in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 496.

<sup>83</sup> Ibid. 497.

What follows from this ambiguity is a further troubling of the primacy of participation within Downey's electronic sculptures, contra scholars like Macchiavello and Ennis. This is because there was a deep affinity between 1960s media based, participative aesthetic strategies and the discourse of cybernetics.<sup>84</sup> For Scott, Downey's ambiguity towards cybernetics means that the aims of his practice were "not to be found in a smoothly functioning machine, let alone in works inviting 'participation,' but in 'the power of rerouting' ... the infrastructure of an apparatus of power, precisely that informed by the 'cybernetic communication systems and energy sources developed by the World War II generation.'"<sup>85</sup> There is much in this claim that resonates with the present chapter, but ultimately Scott's making-critical of Downey's relation to his historical moment and our claim regarding his staging of energetic withdrawal differs in important ways and opens onto different implications.

While Scott finds Downey's electronic sculptures generating "a space teeming with invisible energy and messages that might be captured and redirected," our reading seeks instead what insights might be gained by speculating that on some basic level "messages," or the transmission of information, does not capture what is at stake here.<sup>86</sup> Which is to say, a critical feature of Downey's electronic sculptures might be found in how they stage the resistance of even well-specified energetic materialities to the informational-cybernetic assemblage. In the terms of OOO, we can say the electronic sculptures making partially perceivable of their surrounding electromagnetic environment generates a sensual hint towards an otherwise

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<sup>84</sup> Edward Shanken helps identify the links between cybernetics and participative art in "Cybernetics and Art: Cultural Convergence" (2002). Shanken explains: "Given the emphasis of post-World War II art on the concepts of process, system, environment, and audience participation, cybernetics was able to gain artistic currency as a theoretical model for articulating the systematic relationships and processes among feedback loops including the artist, artwork, audience, and environment." Edward Shanken, "Cybernetics and Art: Cultural Convergence," in *From Energy to Information: Representation in Science and Technology, Art, and Literature*, eds. Bruce Clark and Linda Dalrymple Henderson, 155-77 (Stanford: Stanford University Press, 2002), 275-76.

<sup>85</sup> Scott, "Nothing," 507.

<sup>86</sup> Ibid. 503.

withdrawn energy that nonetheless breathes life into the sculptural situation. In some sense, the electromagnetic field is the object here and though these works grasp at that object through various technical media, they can only ever hope to *allude* to the reality of that which they try to reveal. Their allure can be found in the tension between the intimate sensual profiles they generate and incomprehensible vastness of the electromagnetic force beneath those profiles.

The idea of withdrawal has counterintuitive tension built in, but the kinds of contact made here between the sculpture's sensors and the electromagnetic field reveals how something can gestured to but never fully disclosed. Keep in mind the fact that the sensitivity of many of the technical media we are discussing, such as the Geiger counter in *Radioactive Chair*, or photoreceptive sensors or radio receivers in *A Machine With Three Conditions*, could be—and have been—continually refined over time. In the continual improvement of scientific instruments and technical media, there appears always a bit more resolution that can be gleaned from, in this case specifically, the ceaseless whirling and buzzing of the electromagnetic field, its particles, and dynamics. That more refinement can be introduced into these instruments should not be taken as evidence of an inexorable march towards exhaustive representation, but rather, that there is always more to objects than we previously thought or had initial access to. This captures the central image of object-withdrawal so crucial to OOO in an especially clear way. There is a cosmic excess to the electromagnetic field that will forever foreclose the possibility of another object—be it a human, particle accelerator, ant queen, ancient mushroom, or electronic sculpture—from experiencing it completely, though they all come to grasp at it differently. The history of quantum mechanics provided in the previous chapter gives experimental support to this claim. That contemporary physics' most sensitive technoscientific apparatuses ultimately reveal a subatomic world of paradoxical “wave-materials,” non-localities, and probability

distributions might mean OOO appears close to the mark—however fuzzy, and irreducible the mark might be.

Introducing the object withdrawal of OOO to an art historical analysis of a body of work that seeks to channel, harness, and otherwise explore the potentials of the electromagnetic field is meant to speculate that something about that field will never resolve itself into useful information—in either its first-order or second-order cybernetic renditions. And, in that failure of resolution itself, there is potential. Artists like Barry and Downey were operating in a milieu deeply influenced by cybernetics, and in Downey's case the connection between his practice and the rhetoric of cybernetics is unmistakable. That this is so, however, does not discount the idea that within an attraction to the invisibility and challenging materiality of the electromagnetic field, there might lie the allure of an escape from a world so saturated by information generation and processing.

Of course, these sculptures do facilitate communication, that is inarguable. And it is no surprise that much of the current scholarship renders Downey in terms amenable to the significance of communication within the cybernetic paradigm. The electronic sculptures were designed to communicate with and through environmental energies like sound, light, radio waves, or even atomic disintegration; they communicate with each other under certain conditions; and they facilitate communication with both present and past human participants through the recording of voice, as in *The Human Voice* (1968) or the registering of presence through shadow, as in *Against Shadows* (1969). That the field of electromagnetism and its transduction into other energies offers so many communicative potentials does not preclude the idea we will ever exhaust it—as OOO says of all objects. If, as noted by Downey and analyzed by Ennis, there is a fundamental playfulness to the sculpture's participative conditions—whether



or not they're as emancipative as Ennis claims—then, at least, that has to speak to something basically unruly about the force that flows through them and the experiences they generate. We don't play to control; we play to tap into something uncontrollable, and that is what Downey's electronic sculptures do.

Though this chapter is concerned with Downey's sculptural practice, he was involved in some installations and happenings at this time as well. There is one that is worth briefly mentioning for how well it captures these ideas above, as a way to conclude this section. Funny enough, the work is called *Communication* (1968), was completed in collaboration with The New Group, and was staged three times, twice in Washington D.C. and once in Paris. A flyer for one of the happening's D.C iterations [fig. 6] tells participants that a "communication center" will be set up, and upon arrival they will be provided various communication technologies—"walkie-talkies, closed-circuit TV, telegraphs, intercom radio system, paper and pencils."<sup>87</sup> At that point, a tape is played for all in attendance and then they are told to get as far away from the communication center as possible via any means of travel available, so long as they can return by daybreak. Once they reach their destinations, they are to communicate what they remember of the tape back to the center, where Downey would then inscribe their recollections on paper and then affix them to a map respective of the respondents' locations. Upon successful transmission, the participants can return to the center where "a party begins at midnight... At daybreak, the tape will be played again, frontwards. While it plays the messages will be burned."<sup>88</sup> The participants are instructed to "Stand silent around the fire."<sup>89</sup>

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<sup>87</sup> These are the technologies listed in the work's description in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 127.

<sup>88</sup> Text of *Communication* flyer, see fig. 5.

<sup>89</sup> Ibid.

What takes place here is a complex mobilization of the media of communication, stretched both in time (the course of the happening) and space (wherever participants were able to get to). However, that mobilization is engaged for basically its own spectacular destruction. The information of the happening, that which was communicated, meets a literally fiery end. *Communication* captures information, with the technologies designed to do it, simply to stage its own information's annihilation. As the ash rises into the early morning sky and the light and heat of the fire irradiates away, the silent spectators catch a glimpse at that which information can't capture, the energies it cannot compress. They feel it on their skin and then smell it in their clothes the day after—but these are only allusions to something else not even captured there.

To sum up, this phase of Downey's aesthetics of energy does not seek to know electromagnetism completely; it seeks to offer the potentials its unknowability can aesthetically generate. In that way, Barry's claim that the "use of a material which is invisible, or at least not perceivable in a traditional way... poses problems [but] it also presents endless possibilities" equally applies to Downey's own practice.<sup>90</sup> These possibilities might not immediately resolve themselves into representational artifacts or bits of information, but that's why they're so important at this point in time. Four years after Downey's last electronic sculpture, while on a trip from New York to Latin America—videotaping what would eventually become elements of *Video Trans Americas*—he kept a travelogue. While in San Luis Potosi, Mexico, on the 25<sup>th</sup> of July, 1973, he writes: "The aesthetic experience, because it is nothing but enjoying the unthinkable, sometimes manipulates social systems as if they were sculptural material."<sup>91</sup> It

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<sup>90</sup> "A Conversation with Arthur Rose," *Arts*, February, 1969 (with Barry, Huebler, Kosuth, Weiner), excerpt quoted in Lippard, *Six Years*, 72.

<sup>91</sup> Juan Downey, "Travelogues of *Video Trans Americas*," originally published in *Radical Software* 2, no. 5: Video and Environment (Winter 1973), and reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019). 324.

might be the case that Downey first intuites this idea while working on the electronic sculptures. Beyond that, what better way to describe OOO? It is a philosophy literally predicated on “enjoying the unthinkable,” insistent as it on the withdrawal of all objects and the indirectness of knowledge—hence why the electronic sculptures and OOO resonate so well. By helping make real the withdrawal of the electromagnetic field and other energies from the representational and technological apparatuses of the cybernetic moment, Downey “manipulates” those “social systems as if they were sculptural material.” Following Downey’s metaphor, what I have tried to show is that the aesthetic experience of the electronic sculptures carves out a negative space within those systems—a cavity where their informatic logic breaks down and one brushes up against hints towards the energetic reality that subtends and ultimately escapes them.

### Conclusion

It doesn’t seem too extreme to say we have been at a disadvantage in making this chapter’s argument. Downey himself was clearly invested in cybernetic thought, and scholars of his early work have not only identified this, but positioned it as that which makes his work so historically significant, so emblematic of late-1960s mediascape. Let me be clear: I am not claiming that all cybernetic attachments within this artist’s practice need be evacuated. There is no way a robust history of his work could be written if that were to take place. And, thankfully, those robust histories have been written, and cited above. What I am claiming, however, is that once precise attention is given to the material-energetic dimensions of his practice—a kind of attention the works themselves, as well as some of his own writings, demand—other concerns arise, as well as unseen connections. This is a shift in emphasis and one that can only enrich our understanding of what Downey accomplished.

To say Downey's practice is an aesthetics of energy is to insist that he was deeply interested in how energy, and electromagnetism specifically, might be made operative in the creation of art. The electronic sculptures were an initial attempt think through how this might be achieved. This is not mutually exclusive with a cybernetic predisposition, but it does highlight how his commitment to understanding our concrete material-energetic existence generates an internal tension that the history of cybernetics, and of cybernetic art, alone cannot account for. This chapter makes the case that OOO helps clarifies that tension in a new way—how the objects we attempt to grasp, either aesthetically, practically, or through cybernetic techniques, are always already withdrawn, and can become alluring for precisely this reason. To say this is resist the totalizing logic of cybernetic thought and foreground in its place, as these works do, more than has since been done, their material-energetic commitment. Moreover, when this material-energetic commitment is foregrounded, it makes it easier to see how other contemporary artists embodied it in their own ways—as section two tried to show. Downey's later work will continue to articulate the tension of unknowability within more explicitly geopolitical arenas, as they are more nascent in the electronic sculptures than, say, his *Video Trans Americans* or *Amazon Tapes*. But the tension is already there, which this chapter tried to make clear—an energetic tension that needs to be handled with care.

Apart from a more sensitive account of Downey's practice, our insistence on the aesthetics of energy has the potential to open to those ways in which the artist's work reaches beyond his immediate, historical moment and into the challenges of the twenty-first century. Abstracting energy from its material, terrestrial, or even extraterrestrial specificity contributes to a logic of infinite growth inseparable from ecological devastation. It might be that a well-specified aesthetics of energy can help imagine alternatives to this present-day situation.

This raises more explicitly the relation between energies and our environmental being. How do energies contour our existence as living things inseparable from our habitable surround? What role do energies play the very processes of sensing and thinking about our environment? These are just some of the questions raised in the next chapter, where we turn from Downey's electronic sculptures to his installation practice, with a special emphasis on his 1973 exhibition *Plato Now*. Here we will see what happens when Downey's aesthetics of energy is stretched from its concentration within a sculptural assemblage into something much more diffuse. Key to this shift is the contemporaneous becoming-ecological of cybernetics and the sciences of cognition—especially the focus on embodied cognition being developed by thinkers from Downey's native Chile, like Humberto Maturana and Francesco Varela. Though we broached cybernetics' more ecological phase earlier with the help of Nisbet and his invocation of Bateson, there is much more to explore: What role does electromagnetism play in making real the mind and body's generative immersion in its surrounding material-energetic milieu? How do contemporary media technologies catalyze this immersion, and why does Downey turn to video and performance installations at this specific time to understand this? To answer these questions is to continually refine what it means to say Downey's art is an aesthetics of energy.

### Chapter 3 – Invisible Architectures and Electromagnetic Ecologies

#### Introduction

This chapter explores what happens when Juan Downey's aesthetics of energy is transformed from a primarily sculptural practice—embodied in the electronic sculptures discussed in chapter two—into a more spatially distributed practice of performance and installation. To understand this transformation, this chapter will zero in on *Plato Now*, a 1973, multi-channel, closed-circuit video performance installation initially exhibited at the Everson Museum of Art in Syracuse, New York.<sup>1</sup> It is important to recall this dissertation's main claim, that Downey's art can be understood as aesthetics of energy: a concerted, multi-media attempt to understand how energies might play a transformative role in the making of art; how they can be channeled in the formation of objects, environments, and identities; and how, and towards what ends, they have been positioned as a resource in the developments of modernity, de/coloniality, and the geopolitics of the Cold War. Chapter three, with its focus on *Plato Now*, unpacks specifically what it means to say that Downey channeled the force of electromagnetism in the formation of environments. This is distinct from using electromagnetism in the making of more discrete sculptural assemblages like we saw in chapter two. Here, Downey turns his attention away from the relatively bounded sculptural object and explores the aesthetic affordances of electromagnetism at the performance and installation level.

In this chapter I will claim that the artist still relies on the “mystery” and “illusion” that he found electromagnetism could so easily evoke within the sculptural context, but that his familiarity with the energy and shift towards performance, installation, and video allow him to

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<sup>1</sup> Throughout this chapter, *Plato Now* will be referred to as a “performance installation.” While the term might be a bit unwieldy, it has been chosen so as to lay equal emphasis on both the performers within the work, and the spatial relations arrayed amongst them and exhibition environment. As will be shown, the performers and space work together to make *Plato Now* what it is.

work with it in ways he had not before.<sup>2</sup> More specifically, Downey's turn to performance and installation coevolves with a recognition of the ways in which electromagnetism is not only a vast and elusive force withdrawn from total access (per the previous chapter), but also a profoundly intimate "in-between," a kind of ecological media suffusing the environment and facilitating contact amongst different entities and processes.<sup>3</sup> This is a critical shift in both the artist's conceptualization of electromagnetism, and the aesthetic strategies by which he embodied that conceptualization. It happens at a time, the early-1970s, when the disciplines of cybernetics and cognitive science were beginning to think more ecologically about the relations between an organism and its surrounding milieu. This chapter will demonstrate how Downey engages with thinkers from these disciplines, like cybernetician Gregory Bateson and cognitive scientists Humberto Maturana and Francisco Varela, but also how he steps beyond their ideas in ways unique to his aesthetics of energy. The objective is to understand how Downey gives aesthetic form to electromagnetism as an ecological media—as a force generative of interactive environments rather than objects—and to articulate what kind of contribution he thus makes to an increasingly ecologically aware historical moment.

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<sup>2</sup> "Mystery" and "illusion" are two key phrases Downey used to describe his electronic sculptures in the frequently quoted Leonardo article from the previous chapter. See, Juan Downey, "Electronically Operated Audio-Kinetic Sculptures, 1968," *Leonardo* 2, no. 4 (October, 1969): 403-06.

<sup>3</sup> In using the term "in-between" I am invoking both a standard definition of media, as the material used by an artist in the making of his or her art, as well as something more specific. Art historian Margret Morse uses this phrase in her "Video Installation Art: The Body, the Image, and the Space-in-Between" to describe an experiential dimension proper to video installation and irreducible to any "two-dimensional construction" of a given video installation. She explains: "While an installation can be diagrammed, photographed, videotaped, or described in language, its crucial element is ultimately missing from any such two-dimensional construction, that is, 'the space-in-between,' or the actual construction of a passage for bodies or figures in space and time. Indeed, I would argue, the part that collapses whenever the installation isn't installed is the art." To describe electromagnetism as a media and "in-between" is to highlight simultaneously Downey's use of it as a kind of material in the development of his installation practice, as well as what generates the experiential ground from which his installations emerge. Margaret Morse, "Video Installation Art: The body, the Image, and the Space-in-Between," in *Illuminating video: An Essential Guide to Video Art*, eds. Doug Hall and Sally Jo Fifer (New York and San Francisco: The Aperture Foundation and Bay Area Video Coalition, 1990), 154.

To unpack this claim, the chapter proceeds in four sections. The first section is a detailed description of the *Plato Now* performance installation as it was initially staged at the Everson, read alongside sketches and a drawing that served in its preparation. Taking the exhibition configuration together with its preparatory material is meant to disclose those elements of the work that could not be immediately perceived in situ. In that way, the sketches and drawing are framed as schematics that diagram an array of connections within *Plato Now* Downey purposefully left invisible. The section concludes by suggesting that what forges such invisible connections is the force of electromagnetism—a first step in situating it as a form of ecological media. To be clear, other scholars have noted the invisible operations of *Plato Now* as a defining feature. Valerie Smith contends that the performance installation “captured the invisible energy of the human mind...” and Ming-Yuen S. Ma frames it as “an architecture composed of invisible energies... based more on an acoustic model than a visual one.”<sup>4</sup> My contribution to this literature is characterizing these ‘invisible energies’ as concretely electromagnetic in nature and following this energetic reality where it leads. The signals of the brain are at work in *Plato Now* and they are acoustic insofar as they are predominantly vibratory, so the work of Smith and Ma needs to be recognized. However, I want to suggest that brain signals and the vibratory become operative in this work by virtue of their electromagnetic—if invisible—nature.

The following section clarifies the role of invisibility in Downey’s performance and installation practice through an analysis of his concept of “invisible architecture.” Here, I will rely on Downey’s own writing, the work of Julieta González, and a brief analysis of the media

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<sup>4</sup> Valerie Smith, “Juan Downey: The Invisible Architect,” in *Juan Downey: The Invisible Architect*, exh. cat., ed. Valérie Smith (Cambridge and New York: MIT List Visual Arts Center and Bronx Museum of the Arts, 2011), 28; Ming-Yuen S. Ma, “The Ethereal Acoustic: Juan Downey and Futurisms,” *Juan Downey: Radiant Nature*, exh. cat., organized by Robert Crouch and Ciara Ennis (Los Angeles: Pitzer College Art Galleries and Los Angeles Contemporary Exhibitions, 2017), 152.



technical milieu in which invisible architecture was developed. Invisible architecture is, at base, Downey's framework for thinking about the habitable surround from the vantage of its unseen and energetic nature. For the invisible architect, electromagnetism takes up the structuring role of more traditional materials like steel or concrete.<sup>5</sup> The difficulties that immediately arise here concern both how to understand the unseen contours of an environment, and what kind of materiality is entailed by invisible yet present energies. This section concludes by suggesting the term "suprasensible immersion" as the primary means to understand Downey's invisible architecture and the works that embody it. Suprasensible immersion tries to capture the idea that within Downey's performances and installations, spectators and performers are always already immersed in an energetic environment that surrounds and acts on them while hovering at the edge of their perception. I claim *Plato Now* is an instance of invisible architecture and in order to proceed deeper into the performance installation, invisible architecture must be first understood.

With a full accounting of invisible architecture provided, in the following section we return to *Plato Now*. This third section tackles the philosophic complexity of *Plato Now* head on—now equipped with the means to make sense of its invisible connections outlined in the first section and contextualized in the second. Here we acknowledge that *Plato Now* is a restaging of Plato's Allegory of the Cave and operates within that parable's philosophic coordinates: those concerning the nature of and relationship between perception and cognition. This section affords us an opportunity to see how Downey redresses the idealist distinction between sense and thought instantiated by Plato. It does so by reading certain elements of *Plato Now* alongside historically contemporaneous transformations in cybernetics and cognitive science embodied by

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<sup>5</sup> It is helpful to remember here that Downey was initially trained as an architect and while none of his proposed buildings were ever built much of his art has an architectural dimension insofar as it is intimately concerned with the contours of our habitable surround. Invisible architecture can be understood as a recognition of the ways in which the habitable surround is suffused with energies we cannot see but are no less present.

the works of Gregory Bateson and Humberto Maturana and Francisco Varela. The point of this section is to see how Downey reimagines perception and cognition within *Plato Now* with the help of these thinkers. However, I claim here that Downey does not simply illustrate their ideas, but rather adopts some, challenges others, and creates a dialogue. While Downey no doubt displays an affinity with the attention to ecological interaction and embodiment of Bateson and Maturana and Varela respectively, he ultimately charts his own course—rendering perception and cognition as non-hierarchized, material-energetic modes of access for tapping into our electromagnetic world. What results is twofold. *Plato Now* is understood as an electromagnetic ecology, an environment wherein entities as distinct as the work’s spectators, performers, technical media, and even shadows make meaningful contact with one another via electromagnetic—and even telepathic—means. And, consequentially, we grasp how Downey partially exits the empirical, cybernetic conceptual thought space, revealing his affinity to the ecological philosophies of the twenty-first century, most notably the work of Timothy Morton.

The final section builds on the previous and situates Downey’s electromagnetic vision of ecology in relation to the predominant ecological theories of his art historical moment. More specifically, this section outlines the differences between Downey’s ecological vision and those presupposed by the Batesonian model and media ecology—both immensely popular with the North American video art scene of which he was a part. A brief comparative reading is undertaken in this section between another ecological work of Downey’s and that of a close contemporary of his, Frank Gillette. The objective here is to state what delineates Downey’s ecological vision from others of this period, and what contribution it thus makes in relation. The section concludes with a speculation as to why this dissertation’s guiding principle—reading

Downey's practice as an aesthetics of energy, instead of the typical cybernetic interpretation—is required to fully account for what makes his electromagnetic ecologies unique.

### “Concerning the Visible and Invisible”

The goal of this first section is to introduce readers to *Plato Now*. In what follows, the actual exhibition as well as some preliminary sketches and a drawing will be described in detail. This is to give the reader both a sense of what it might have been like to experience *Plato Now*, and what thought went into its design. From the outset, I am claiming there is a lot going on within the work that is purposefully invisible. So, by reading *Plato Now*'s exhibitionary configuration alongside its two-dimensional preparatory material, this section hopes to make legible some of the work's integral elements and the connections among them that are otherwise difficult to detect. The section will conclude by suggesting electromagnetic energy as *Plato Now*'s operative media—the in-between through which its components interact. This sets up the reader for the following section: a detailed investigation into the artist's theory of “invisible architecture,” where invisible, energetic connections are made structural to the habitable surround.

First, *Plato Now* in situ. *Plato Now* was exhibited at the Everson Museum of Art in Syracuse, New York, 1973 on two cold evenings in January, the 6<sup>th</sup> and 7<sup>th</sup>. Starting at 8:30PM in the museum's sculpture court, with the sun already well below the horizon, spectators would find little reprieve from the darkness inside. *Plato Now* afforded only two major sources of light in an otherwise purposefully shadowy space—a large spotlight located at back of the room, and a row of nine, evenly spaced, dimly glowing, black-and-white closed-circuit television (CCTV) monitors. Located just behind these monitors were nine performers, seated cross-legged atop pillows and facing the wall upon which the spotlight shone. Among them were Downey himself,

his wife Marilys Belt de Downey, yet-to-be famous video artist Bill Viola, and prominent video curator David Ross.<sup>6</sup> Each of the performers were equipped with headphones and neuronal sensors that monitored their brain activity. They were all instructed to meditate. If, throughout the course of the performance, their brains produced enough “alpha waves”—a kind of heightened brain activity linked to meditative concentration—their sensors would detect this, and then trigger the playback of prerecorded excerpts of Plato’s dialogues in their headphones. The excerpts were taken from *The Republic*, *Timaeus*, and *Theaetetus*, and beyond outlining Plato’s Allegory of the Cave, they concerned what Downey described as “the visible and invisible” in an earlier notebook sketch of the performance installation [fig. 1]. Downey would later publish the excerpts in an accompanying article also titled *Plato Now* in the “Video and Environment” issue of *Radical Software* from the same year—to which we will return later. Importantly, if the sensors could not detect the predetermined frequencies of alpha level brain activity in any given performer, no excerpts would play, and they would be met with a silence only they could hear.

Located in front of each performer between them and the wall they faced was a closed-circuit video camera, nine in all, that fed the performers’ close-ups to the monitors located behind them. Most likely, spectators would enter the performance installation and make their way across the room to view these monitors and the bodies facing away. In so doing the spectators’ figures, along with all other solid forms in the room, were caught by the bright spotlight located at the opposite end of the space. What resulted was a mix of alternately stretched, soft-edged, and tight, well-defined shadows dynamically occupying the wall facing the performers [fig. 2]. The contours and dimensions of the shadows, most of them moving with the spectators’ bodies, were determined by their changing distances between the spotlight and the

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<sup>6</sup> The Everson was major hub of early video art activity in the early-1970s, due in large part to the efforts of Ross, and it is where Viola began his work on the medium as a technical assistant.

wall. Looming forms—some barely there and evaporating into the concentrated field of light, and others marking clear outlines—swayed across the wall the facing the performers. But, by all accounts, each performers' eyes were closed shut in meditative concentration [fig. 3]. The activity of the room, indexed by the shifting absences of visible electromagnetic energy that shadows are, was invisible to the performers.

The above description is *Plato Now* imagined as it would be during its initial exhibition and what it might have been like to be there on one of those January evenings in Syracuse.<sup>7</sup> It comes off as an obscure and shadowy space, probably quiet, filled with hushed whispers and unresponsive performers barely aware of their surroundings. The question then becomes: What's actually happening here? As noted earlier, much of the action of *Plato Now* is invisible. That is, the important points of contact and connection within the performance installation are outside our capacities to sense them. Luckily, Downey drew up at least two preliminary sketches [fig. 1 & 4] and a more detailed drawing [fig. 5] to diagram what's taking place in *Plato Now*. I will outline some insights from these two-dimensional renderings of *Plato Now* its three-dimensional counterpart leaves purposefully obscure. We can think of these two-dimensional renderings of *Plato Now* as schematics or diagrams of the performance installation. They help make practically legible some of the core concerns and connections the performance installation tried to embody by less perceptible means.

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<sup>7</sup> Thirty-nine years after this initial installation, and nineteen years after the artist's death, another installation of *Plato Now* was performed in the Tanks at the Tate Modern with the help of Marilys Belt de Downey and David Ross. Keeping in line with the sketches and other documentary material, the original layout was preserved with the addition of upgraded technology—digital instead of analog video-cameras. The new location, however, greatly altered the spatial terms of the restaging. The Tanks at the Tate Modern are massive, concrete, subterranean oil tanks converted into performance spaces. The dark and cavernous atmosphere of the restaging differs dramatically from the initial, Everson Museum of Art, white-cube gallery installation. A difference, no doubt, that substantively impacts the experience of the work. Nonetheless, it is the first installation of *Plato Now* that concerns this chapter. For more on this restaging see, Tate Modern, "The Tanks: Art in Action – Restaging Juan Downey's *Plato Now*," accessed February 17, 2016, <http://www.tate.org.uk/whats-on/tate-modern-tanks/exhibition/juan-downey>.

The major commonality between the sketches and drawings I want to focus on are the labeling of different elements within the represented space and the diagrammatic use of arrows to indicate potential connections and interactions among those elements. As to be expected for preliminary material, all of the technical media within the installation—such as the video cameras, CCTV monitors, neuronal sensors, audio equipment, and spotlight—are labeled and configured more or less as they were in the exhibition, as are the performers and spectators. The sketches and drawing also detail with great care the spectators’ or “public’s” shadows—as well as the architectural surface they would be cast upon. So far, all of these things could be seen in the performance installation itself. What’s less visible in situ, however, and referred to consistently within these two-dimensional renderings are the “brainwaves” of the performers. Sometimes they are referred to as “alpha waves.” While we would not be able to see these brainwaves during the performance installation, their explicitness in the planning stages of the work marks them out as invisible yet integral elements within the space.

In the sketches and drawing, these brainwaves, or the performers producing them, are situated amongst a network of arrows leading from one component to another. In one sketch [fig. 1], arrows emanating from a line of text reading “brainwaves” positioned right above the performers’ heads circuits into their bodies and then out into the monitors located at their backs. In a less preliminary drawing sharing the same title as the performance installation [fig. 5], the diagrammed connections are more complex, the labels neater, and the represented space more illusionistic. It shows the installation more or less as would be exhibited in the following months. In it, two loops of multiple arrows link up “performer’s brains producing alpha waves,” “prerecorded quotations of Plato’s Dialogues,” “images of performer’s faces in meditation,” the “public,” and the “shadows of the public.” It is clear that Downey meant these arrows to detail

interactions among elements of the work that are otherwise invisible. For now, it is difficult to understand what kind of contact might be made between the “public” and the “alpha waves” of the performers, or those performers—with their eyes closed—and the “shadows of the public” they cannot see. So, for now, I suggest we accept that a key dimension of *Plato Now* is precisely the invisibility of its operations.

Yet, Downey provides us a way to begin making sense of this invisibility—a task the following section will take up explicitly. Within the context of Downey’s aesthetics of energy, it is plausible that the one thing capable of facilitating these myriad connections between human bodies, video cameras, audiotapes, neuronal sensors, brainwaves, and shadows is the force of electromagnetism. “With the exception of gravity,” Downey writes in 1977, “the whole of the Universe shares its electromagnetic nature with Video and with Thought. The process of thinking, regardless of its artificiality (computers) or naturalness (brains) is also electromagnetic signals.”<sup>8</sup> There are no doubt clear cybernetic undertones to this proclamation—in its thinking brains and technical media together—but I want to emphasize the energetic means by which this thinking is achieved. The force of electromagnetism serves for Downey as the common ground between “Video” and “Thought,” and I want to suggest *Plato Now* as an earlier exploration of this idea. Video is its primary media in the conventional sense, and the repeated mentions of brainwaves in the preparatory material alongside the inclusion of neuronal sensors make thought and thinking integral to its operation as well. Therefore, it seems likely that the many invisible connections of *Plato Now* would have been understood by Downey as primarily electromagnetic connections. Put another way, electromagnetism can be understood as the “in-between,” the

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<sup>8</sup> Juan Downey, “Architecture, Video, Telepathy: “Architecture, Video, Telepathy: A Communications Utopia.” *Journal of the Center for Advanced TV Studies* 5, no. 1 (1977): 1-3; reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 341.

media in an expanded sense, by which *Plato Now*'s different elements come into and sustain contact with one another—however invisible that process might appear.<sup>9</sup>

The question then becomes: How do we make sense of the relation between invisibility and electromagnetism within *Plato Now*? The following section will help us understand this better by looking to Downey's idea of "invisible architecture," a theory of the artist's that frames the structuring connections of our environment in unseen yet energetically real terms. Before we can do deeper into those complex philosophic implications of *Plato Now*'s outlined in the introduction, we must first understand the invisible architecture that gives it its form.

### Sensing the Invisible, Building the Suprasensible

In order to make legible the strange connections of *Plato Now* outlined above, and their broader implications, a full accounting of invisible architecture is required. Invisible architecture is a major feature of Downey's aesthetics of energy during the 1970s. This section will explore the concept: In what context did it originate in Downey's thought? How does it work? What is its relation to the electromagnetism so central to Downey's aesthetics of energy? What media-technical transformations was invisible architecture responding to? What is at stake in claiming that invisible architecture possesses a kind of materiality? And how does it operate in Downey's performances and installations on more concrete terms? To answer these questions, I will first turn to Downey's own writing on the topic, and then to the scholarly work of Julieta González, who has written on the architectural elements of Downey's practice. From there, I will briefly analyze another performance and installation of Downey's to bring the specifics of invisible

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<sup>9</sup> I am tempted to, on the basis of this claim, suggest that Downey positions electromagnetism as a kind of *elemental* media in line with recent transformations in media studies and geography. And while I believe the connections here are quite strong, and Downey could be regarded as prefiguring this concept in his own way, I do think this is outside the current bounds of what is already a quite lengthy chapter.



architecture closer into view. The section will conclude by introducing the term “suprasensible immersion” as a way of thinking through one of invisible architecture’s primary implications—that we are always already surrounded by a material-energetic reality that, while occupying our lived space like more visible forms of architecture, more often than not escapes our capacity to perceive it.

Downey’s first printed reference to invisible architecture comes in a short article titled “Technology and Beyond” in the “Video and Environment” issue of the popular but short-lived video art magazine *Radical Software* (1970-74). This issue also contained an article titled “Plato Now” which served as primary documentation of the performance installation’s exhibition at the Everson from a few months prior.<sup>10</sup> That *Plato Now* and invisible architecture make their first appearances side by side is no coincidence, and I argue that *Plato Now* can be thought of as an invisible architectural construct. But to fully grasp what invisible architecture is, we must understand the context in which it first appears.

“Technology and Beyond” covers a myriad of topics in its two pages, from the problematics of present-day uses of cybernetics to the envisioning of a “dematerialized city” made possible only through cybernetic systems of transportation and communication. In the previous chapter, it was noted that cybernetics has been the primary frame through which Downey’s art has been read, and “Technology and Beyond” stands in as one major reason why. It is profoundly influenced by cybernetic theories of human and technological integration, and positions cybernetics as the means by which Western society can redress “the impasse to which the pre-cybernetic use of technology brought us to; ecological balance threatened by an endlessly

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<sup>10</sup> This article was cited in the previous section. It contained the reprinted excerpts of Plato’s dialogues used in the performance installation, as well as photographs of the exhibition.

increasing number of tools.”<sup>11</sup> Effectively, “Technology and Beyond” is call to foreground the utopian potentials of cybernetics, viewed as a remedy for previous generations’ oppressive and extractive uses of technology.<sup>12</sup>

Invisible architecture first appears in “Technology and Beyond” as the means by which its utopian vision of cybernetics can be implemented. “Ironically,” Downey claims, “the man-nature chasm can only be closed by technology. The process of reweaving ourselves into natural energy patterns is Invisible Architecture, an attitude of total communication within which ultra-developed minds will be telepathically cellular to an electromagnetic whole.”<sup>13</sup> While “Technology and Beyond” is often quoted in Downey scholarship, the last clause of the above sentence is typically left out. It appears that contemporary critical attitudes have little time for telepathic speculation.<sup>14</sup> This is surprising given how central telepathy is to Downey’s formulation of invisible architecture: “The invisible architect becomes one with [electromagnetic] energy and manipulates this wave-material. Invisible architecture re-explains electronic circuitry as a bio-feedback tool in evolving the collectivity of human brains to transmit and receive (non-verbally) high frequency electromagnetic energy.”<sup>15</sup> It is clear that Downey

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<sup>11</sup> Juan Downey, “Technology and Beyond,” *Radical Software* 2, no. 5: Video and Environment (Winter, 1973): 2; reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos, 321-22. (Mexico City: Ediciones MP, 2019). For the following citations of this text, the original *Radical Software* pagination will be used.

<sup>12</sup> “Nineteenth century industrialization sought to replace and control natural effects, thus creating cultures with rigid, overspecialized and fragmented roots: millions of disconnected individuals. Cities have become monuments to the mass marketing of objects, with the consequent glorification of transportation systems, the most common and obvious source of ecological breakdown. Transportation systems are the web of centralized imperialistic greed. The price of sustenance for these networks of exchange has also culminated in worldwide political madness.” Ibid.

<sup>13</sup> Ibid.

<sup>14</sup> This is not the case, at least, for James Nisbet in his discussion of Robert Barry in *Ecologies, Environments, and Energy Systems of the Art of 1960 and 1970s* (Cambridge: MIT Press, 2015). In another point of striking similarity between the two artists, both Barry and Downey seemed amenable to possibilities of telepathy arising from their work on imperceptible electromagnetic waves. As Nisbet sees it, Barry’s interest in telepathy centered on “the materiality of mental transmission as its own form of meaningful activity. His methods were not for uncovering otherwise latent or repressed thoughts, but for realizing the intersubjective potential of bringing together the imaginary and material qualities of the energetic world” (157).

<sup>15</sup> Ibid.

believed invisible architecture, in its operating through the “natural energy patterns” of electromagnetism, could support a new regime of cybernetic communication. This is predicated on the fact that both brains and most contemporary media technologies likewise partook in electromagnetic signals and might be brought closer together on that material-energetic basis.

That invisible architecture might allow for telepathic communication between differentially embodied entities will become central to our later discussion of *Plato Now* and its realization of electromagnetism as an ecological media. However, while invisible architecture sets the ground for a kind of utopian, cybernetic model of communication, it is also a theory about the very ground or environment in which such communication might take place. Indeed, to understand invisible architecture’s telepathic-communicational potentials, we must first understand what sort of environment it presupposes. At base, invisible architecture is Downey’s way of acknowledging our situatedness in, and thus our possibility for “manipulating,” a resolutely electromagnetic environment. This is an environment that oscillates between visibility and invisibility, but still structures our lived surround like more conventional architectures.

Downey even situates invisible architecture historically in relation to contemporary architectural trends to make the case for why artists should turn their attention to, and attempt to make sense of, the invisible energies around us. Writing in the architectural magazine, *On Site: Not Seen And/Or Less Seen Of*, Downey figures invisible architecture as the next step in a general tendency towards Western architecture’s “dematerialization”—then heralded by the preponderance of “lightweight structures such as domes / inflatables / membranes / shells / tensegrities.”<sup>16</sup> Invisible architecture effectively pushes this trend to its logical extreme, where

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<sup>16</sup> Juan Downey, “Invisible Architecture,” *On Site: Not Seen And/Or Less Seen Of*, no. 4 (1973); reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 332. It is perhaps interesting to note that in a discussion of postwar architectural trends by architectural historian Mark Wigley, the phrase “invisible architecture” is mentioned twice to describe either imagined architectures or those

tangible materials are diffused into their energetic elements, thereby “recuperating the energy import of the universe.”<sup>17</sup> “The thought is,” he continues, “to involve the invisible, while liberating art from the parameters of the Visible Spectrum.”<sup>18</sup> Here Downey moves beyond architectural discourse into art more broadly, and it is also where the relation between invisibility and energy comes through clearest. Invisible architecture would be the framework by which visual art—architecture included—opens up new possibilities for creation outside the conventional limits of the immediately, visually perceptible. Furthermore, his call for liberation from the “Visible Spectrum” can be read as implying those myriad elements of the electromagnetic field we cannot readily see but are no less present—like the cosmic background radiation detected by some of his electronic sculptures. From this follows the idea that invisible architecture is invested in facilitating an expansion of artistic practice, or aesthetics more generally, into a specifically *suprasensible* electromagnetic domain—one more resistant to the conventions of representation within art more generally. It would be here where the possibilities of something like telepathic communication might be more appropriately entertained.

It is important to mention that however far-out something like telepathic communication or energetically dematerialized architectures sound, they are aesthetic responses to transformations within Downey’s media-technical milieu. Understanding this is crucial to grounding Downey’s invisible architecture in its proper, historical context. Remember from chapter one, modernist painter František Kupka understood the “artist as an emitter of telepathic

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architectures that could not be immediately sensed—like the architectures of networked communication systems. In both cases, however, the work of Downey goes unmentioned. See, Mark Wigley, “Network Fever,” *Grey Room*, no. 4 (Summer, 2001): 82-122.

<sup>17</sup> Downey, “Invisible Architecture,” 332.

<sup>18</sup> Ibid. It will strike the reader how similar this claim is to some of the ideas of Robert Barry detailed in the previous chapter. Many of Barry’s experiments with electromagnetic energy were concerned with exploring what forms of art might exist outside the realm of the immediately, visually perceptible. See the conclusion of the chapter two and the section: “Energy as (a) Conceptual Matter?”

waves on the model of wireless telegraphy.”<sup>19</sup> It was this radical transformation in communication technology, that electronic signals could transmit disembodied messages through the air at incredible speeds, which provided a partial catalyst for Kupka’s telepathic-artistic model. Downey, too, was responding to media-technical transformations that exist in the same genealogical trajectory as those to which Kupka was responding—electromagnetically activated, signal processing technologies—though at a later stage of their development.<sup>20</sup>

Prominent Downey scholar Julieta González gives us a clearer sense of this response, and its relation to Downey’s invisible architecture in her “From Utopia to Abdication: Juan Downey’s Architecture without Architecture” (2011). While this text’s primary function is to outline Downey’s actual, if unrealized, architectural output, it is helpful for understanding how invisible architecture was informed by his surrounding media-technical milieu. Downey was initially trained as an architect, but none of his projects were ever constructed and exist mainly as plans. Thus, González supplements her reading of these projects with analyses of Downey’s sculptural and performance practice to ascertain what his “architecture without architecture” actually entailed. Through a brief examination of his electronic sculptures and performances, she argues that his architectural ideas—including invisible architecture—developed through an “understanding of the world from the perspective of the subatomic; the technological revolutions

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<sup>19</sup> Linda Dalrymple Henderson, “Vibratory Modernism: Boccioni, Kupka, and the Ether of Space,” in *From Energy to Information: Representation in Science and Technology, Art, and Literature*, eds. Bruce Clarke and Linda Dalrymple Henderson (Stanford: Stanford University Press, 2002) 139. Much of Henderson’s art historical writing explores the question of how certain transformations in science and technology generate contemporaneous transformations in artistic practice. See also Linda Dalrymple Henderson, “X Rays and the Quest for Invisible Reality in the Art of Kupka, Duchamp, and the Cubists,” *Art Journal* 47, no. 4, Revisiting Cubism (Winter, 1998): 323-340; and Linda Dalrymple Henderson, “Illuminating Energy and Art in the Early Twentieth Century and Beyond: From Marcel Duchamp to Keith Sonnier,” in *Energies in the Arts*, ed. Douglas Kahn, 127-69 (Cambridge, MA: MIT Press, 2019).

<sup>20</sup> That this is so foregrounds the importance of chapter one’s genealogical method. Downey’s aesthetics of energy did not appear out of nowhere, but rather coalesced amongst and with the help of historically specific transformations in how artists and scientists thought about electromagnetism.

of the ‘second machine age’ were formulated on the basis of miniaturization, micro-systems, and circuits. We begin to understand Downey’s precise notion of invisible through his heightened awareness of the fact that the future lay in the ‘micro’...”<sup>21</sup> That is, González positions Downey’s interest in the invisible as a function of his response to an increasingly miniaturized media-technical milieu. While her invocation of “the subatomic” might seem like an occasion to address the role of electromagnetism in Downey’s practice as its own entity or guiding principle, it is rather only a pathway towards a concern with miniaturized technologies that are themselves electromagnetic—even if that material-energetic fact is not foregrounded as much as it is in this dissertation. This aside, González claims that the more the operations of Downey’s contemporary technologies operated below the threshold of visual perception, the more an interest in the invisible became central to his practice.

Downey was not alone in seeking out the invisible within his media-technical milieu, and some of its most prominent thinkers lighted on this condition as well. Buckminster Fuller’s foreword to the conceptual art exhibition *Projections: Anti-Materialism* cited in the previous chapter is a case in point.<sup>22</sup> As is Marshal McLuhan’s famous essay “The Invisible Environment: The Future of an Erosion” (1967). It is here he notes that invisibility “is another mysterious feature about the new and potent electronic environment we now live in. The really total and saturating environments are invisible. The ones we notice are quite fragmentary and insignificant compared to the ones we don’t see.”<sup>23</sup> What is key to understand here is that invisibility is made a

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<sup>21</sup> Julieta González, “From Utopia to Abdication: Juan Downey’s Architecture without Architecture,” in *Juan Downey: The Invisible Architect*, exh. cat., ed. Valérie Smith (Cambridge and New York: MIT List Visual Arts Center and Bronx Museum of the Arts, 2011), 65.

<sup>22</sup> In Fuller’s foreword he explains: “More than 99.9 percent of all the physical and metaphysical events” central to humans’ effective habitability of the planet “transpire within the vast non-sensorial reaches of the electromagnetic spectrum.” See Buckminster Fuller, “Foreword,” in *Projections: Anti-Materialism*, La Jolla Museum of Art, May 15-July 5, 1970, exh. cat. (San Diego: La Jolla Museum of Art, 1970). Excerpt quoted in Lippard, Lucy R. *Six Years: The Dematerialization of the Art Object From 1966 to 1972*. (New York: Praeger, 1973), 165.

<sup>23</sup> Marshal McLuhan, “Invisible Environments: The Future of an Erosion,” *Perspecta* 11 (1967): 164.

consequence of those transformative media-technical advancements animated by the sub-perceptual dynamics of electromagnetism.

What is also key to understand is that these technical media and their electromagnetic, sub-perceptual dynamics were often utilized within a discourse of dematerialization that sought to, if not evacuate all together, then at least dislocate the issue of materiality.<sup>24</sup> Part of making the case that Downey's practice is an aesthetics of energy is understanding how the artist treated electromagnetism as material or media through which art could be made. Invisible architecture can be thought of the as the means by which electromagnetism might be used in this way, while acknowledging the challenge a limited scope of visibility poses to such a project. To be clear, this is not the same thing as claiming electromagnetism or invisible architecture have no materiality or physical presence at all just because they can manifest in unseen ways. In a 1971 drawing titled *Invisible Architecture, Inc.* [fig. 6], Downey states as much when he describes the electromagnetism of invisible architecture as "almost inmaterial [sic]." The "almost" is crucial. It can be read as Downey's way of recognizing electromagnetism's challenging materiality, hovering at the threshold where more solid forms of matter condense from their subatomic constituents. Therefore, I argue that to best grasp Downey's aesthetics of energy—informed as it is by his "understanding of the world from the perspective of the subatomic"—the energetic

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<sup>24</sup> The reason it is important to speculate on the materiality of something like invisible architecture, or the materiality of the invisible more broadly in this historical moment is because the technical conditions that generated this interest in the invisible—namely the seemingly invisible operations of electromagnetic signal processing technologies—were developed along the lines of a cybernetic and information-theoretic paradigm that is, at its core, insensitive to the particulars of material embodiment. While there have been iterations of the cybernetic program that take materiality more fully into account (which will be discussed in the following section) there nonetheless remain echoes within them that distort the significance of how our unruly material-energetic world takes shape. This distortion serves to mask the noise generated by the challenging, withdrawn nature of objects, so as to make them more amenable to organization and control by cybernetic means. Much of the previous chapter was spent discussing the role of dematerialization within conceptual art and how it was seen as evacuating materiality from contemporary art. Downey's aesthetics of energy is a major contribution to that discussion precisely because it secures some form of materiality for electromagnetism. For more, see the section "Energy as (a) Conceptual Matter?" in chapter two.

materiality of the invisible must be accounted for and foregrounded.<sup>25</sup> To that end, I would like to qualify González's invocation of the "micro" as the *microphysical*.

This rhetorical move retains the sense of small-scale electronic transformation indicative of information age advancements, and the ostensible invisibility of its operations, while foregrounding the physicality or materiality of the electromagnetic energy that animates these technologies and Downey's invisible architecture. Electromagnetism is microphysical. This means that while electromagnetic interaction or force might happen at incredibly small scales—invisible to non-technically aided human perception—it still possesses an effectuality that can resolve itself into the perceptible, *macrophysical* domain. This was a major point of contention when the electromagnetic field was first formalized by James Clerk Maxwell in the nineteenth century. Many of his contemporaries struggled to understand that the electromagnetic "field was not a phantom: it held real energy that could be made to do mechanical work, and it exerted mechanical forces of electric and magnetic attraction and repulsion" that are visible to the naked eye yet appear to go on in the intervening space between objects.<sup>26</sup> Holding on to the physicality or materiality of electromagnetism in this way allows us to foreground the invisibility of Downey's invisible architecture, while not divesting it of its physical or material presence and capacity for transformation. González helps us grasp the fact that invisible architecture emerged from a specific media-technical milieu in which technical miniaturization and invisibility went hand in hand. What is left unsaid in her work is the way in which an evacuation of materiality

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<sup>25</sup> González, "From Utopia to Abdication," 65.

<sup>26</sup> Nancy Forbes and Basil Mahon, *Faraday, Maxwell, and the Electromagnetic Field: How Two Men Revolutionized Physics* (Amherst, NY: Prometheus Books, 2019), 206. Maxwell's biographers, Forbes and Mahon, go on to say what made the James Clerk Maxwell special was that "[h]e was the first to recognize that the foundations of the physical world are imperceptible to our senses" (210). It is easy to see, given this, the kinds of connections between the history of electromagnetic physics and Downey's aesthetics of energy—hence the genealogical nature of this dissertation's first chapter.



often sneaks into this historical constellation. However, just because something is invisible does not mean it is wholly immaterial.

Keeping in mind the microphysical dimension of electromagnetism vis-à-vis invisible architecture allows us to attend to both terms in Downey's concept. The "micro-" allows us to foreground that invisible architecture exists at scales outside of non-technically aided human perception. Whereas the "-physical" helps us keep in mind that the electromagnetism of invisible architecture plays a real, structuring role in how we interact with the world. Remembering Downey's training as an architect, it is no surprise that he thought deeply about the built environment and the pressures it exerts on those who inhabit it. The "architecture" in invisible architecture is meant to highlight how the force of electromagnetism takes up and contours space—like more conventional architectures—but does so in ways that are not immediately perceptible and energetically effervescent. If we are to understand *Plato Now* in invisible architectural terms, these points cannot be overstated. It is a call to remember that, for Downey, something like the telepathic relation between his performers and the public's shadows, when understood in electromagnetic terms, might indeed have transformative, material effects despite their existence outside of normal perception. Electromagnetically speaking, the relation would be an actual construction of invisible architecture.

To ground these points, I will briefly discuss a contemporary performance and installation of Downey's. Like *Plato Now*, they can be thought of as instantiations of invisible architecture—as means of foregrounding and manipulating the invisible yet effectual energies around us. Take as a first example *Invisible Energy Dictates a Dance Concert* (1969) [fig. 7]. In this work, made while Downey was still living in Washington D.C., he installed different sensors at popular locations around the National Mall, such as the Smithsonian Institute, The Museum of

History and Technology, and the Art Industries Building.<sup>27</sup> These sensors were designed to detect radiation, seismic vibrations, radar waves, radio waves, and aircraft communication signals. Downey then translated these signals into an audible form and played each for a single dancer assigned to each form of energy. This allowed them to translate further the energies into embodied movements while an audience watched. These energies required some kind of translation into a perceptible form to be acted on by the performers, but they exist in the first instance outside the human perceptual system. This work can then be thought of providing the conditions in which invisible emanations of electromagnetic energy were made materially sensible for both performers and spectators. In a way, the bodies of the dancers can be thought of as invisible architectural conduits, nodes through which invisible energies are brought partially into the perceptual domain.<sup>28</sup>

Downey's *Tremors* (1970) [fig. 8] can be understood in a similar way. Like *Plato Now*, it was installed at the Everson Museum of Art in Syracuse, New York. The work has some similarities to Downey's electronic sculpture *Radioactive Chair*, but it is literally more spread out—in line with his contemporary turn towards performance and installation. *Radioactive Chair* detected radioactive energy and then vibrated a small seat upon which spectators could sit, bringing that energy more clearly into perception. *Tremors* used a seismometer to detect the

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<sup>27</sup> The other locations were The Museum of Natural History, The Air Museum, and the Freer Gallery. The political significance of these locations is touched on in Felicity D. Scott, "Nothing is a Closed Circuit," in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos, 495-508 (Mexico City: Ediciones MP, 2019).

<sup>28</sup> Julieta González approaches this idea in her "From Utopia to Abdication" referenced earlier in the section. In a footnote she explains that she uses the verb "to perform" in relation to Downey's invisible energies and architectures "because they entailed a complex performative structure, which... stresses the temporary manifestation of these structures, their contingency on the participation of the public and the performers, and the explicitly non-programmatic character that underscores their unfeasibility as architectural forms." Given the difficulty of conceptualizing invisible architecture in terms legible within the material confines of architecture as we usually experience it, González foregrounds the fact that they need to be "performed" so as to come to fruition. I agree that the role of the performer is central within these works, and I would further add that their challenge to the conventional materiality of architecture is one of their strengths. González, "From Utopia to Abdication," 65.

energetic disturbances of the planet, most of which under normal circumstances are far too faint to be felt, and then amplified these vibrations, causing a large platform to shake. Spectators could either stand, sit, or lay down on this large surface, tuning in with their whole bodies to the planet's imperceptible, subterranean movements [fig. 8]. Importantly, the rotation of the magnetized iron core at our planet's center—which Downey represented in a preliminary drawing of *Tremors* [fig. 8a]—generates the electromagnetic field that protects our planet from solar radiation, ensures the viability of our biosphere, and generates the centrifugal force required for tectonic action to happen. *Tremors*, again, creates the conditions for these invisible energetic movements, that are always with us yet outside our perceptual capacities, to be felt in a new way.

To wrap up this section I want to insist that a key element of these works, and the invisible architectures they embody, is *suprasensible immersion*. This term is meant to invoke the idea that inhabitants of Downey's invisible architectures are immersed in an energetic environment that exists, more than not, outside of their perceptual capacities yet is still with them. In both of the works above, electromagnetic energy overflows. What is important is that the energy is *there*. It *is* surrounding and *the* surrounding. It materially takes up space but only ever partially resolves itself—through translation into sound or by determining the movements of dancers—into readily sensible forms.<sup>29</sup> In the context of Downey's performance and installation practice, suprasensible immersion acts as a prompt to speculate on the surrounding material-energetic presence of the sensorially evasive.

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<sup>29</sup> This is an iteration of the idea of energetic withdrawal introduced in the previous chapter. It was there we learned that Downey's electronic sculptures gave their spectators partial glimpses into a vast, electromagnetic environment, while never—because it is impossible—capturing that environment in its totality. They simultaneously entertained the unknowability of our electromagnetic surround while making it partially perceivable and alluding to what potentials such perception can afford. The works above do this as well, in more spatially distributed ways through installation and performance. For more on the notion of withdrawal, specifically in terms of art, see: Graham Harman, *Art and Objects* (Cambridge, UK: Polity Press, 2020).

Downey's practice at this time, and its core feature of invisible architecture, can then be understood as mobilizing around the intuition that we are always already immersed in the suprasensible expanse of our electromagnetic universe. This intuition tracks with the interest in invisibility at this time—signaled by Fuller, McLuhan, Downey, and even Robert Barry, who all recognized that there were important things happening outside the bandwidths of, at least, visual perception.<sup>30</sup> Invisible architecture participates in this interest but supplements it with a distinctly energetic component. To continue our analysis of *Plato Now* with these considerations in mind is to seriously entertain the material-energetic reality of its invisible elements and the connections they create. For the closed-eye meditator, very little is visible in within the performance installation, though they are configured as central actors within the space. Their brainwaves, detected as electromagnetic signals by the neuronal sensors, become elements within the work's invisible architecture.

This last point is especially important because, as we will see, *Plato Now* is about the nature of and relationship between perception and cognition. To render these processes as manifestations of our contact with the electromagnetic universe has wide-ranging implications. This is what will be discussed in the following section.

### Plato then and *Plato Now*

It is helpful to recount this chapter's objective: To understand how Downey figured electromagnetism as a kind of ecological media in the construction of aesthetic environments, as opposed to more discrete sculptural assemblages. I am claiming that *Plato Now* can be

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<sup>30</sup> Remember from last chapter that Barry's installation practice, while described most often in conceptual terms, was about interrogating the limits of art understood from within a primarily visual paradigm. His interest in electromagnetism as an artistic material emerged from precisely this complication of visibility. See: chapter two, section "Energy as (a) Conceptual Matter?"

understood as exemplary in this regard, and to better understand the performance installation we first needed to understand the artist's concept of invisible architecture that guides it. From the previous section, we now know that invisible architecture was Downey's way of identifying and working with the imperceptible yet effectual force of electromagnetism within our lived surround. This puts us in a better position to tackle the invisible connections that *Plato Now* creates and operates through. What has been left largely untouched in this chapter until now is the fact that *Plato Now* is a restaging of Plato's Allegory of the Cave—a parable concerned with illustrating and hierarchizing a distinction between cognition and perception. This locates *Plato Now* squarely within its source material's philosophic coordinates, and raises the question of what this invisible architectural construct is saying about the nature of and relationship between thought and sense. Or, put differently, *Plato Now* asks: How are cognition and perception transformed once configured in an environment whose defining feature is—at least for Downey—its electromagnetic nature?

From the outset, this section is claiming that *Plato Now* renders perception and cognition in a fluid, permeable, and non-hierarchized relation deeply at odds with the original allegory. The making fluid of the relation between perception and cognition within the context of Plato's Cave serves to generate another kind of fluidity within which our modes of accessing the world are linked together and submerged into a more encompassing, ecological environment. To insist that thought and sense are ultimately closer together than Plato would have it can be read as further insisting that thought and sense are operating on or through a shared medium or media, rather than fundamentally distinct, and productive of fundamentally different effects. That is, if Downey is saying our thought bleeds into the perceptual world and vice versa, then both thinking and perception must emerge from the same milieu. For him, that milieu is our electromagnetic

universe: where the signals of the brain in thought share a material-energetic reality with the glow of a CCTV monitor or the contours of a shadow—all elements inside *Plato Now*. This is what it means to say that Downey figures electromagnetism as an ecological media in the construction of aesthetic environments—where different processes and entities are able to assemble together and interact on the grounds that they partake in a shared energy.

Such a move is profoundly responsive to Downey's theoretical milieu. The early-1970s saw serious transformations in how cybernetics and cognitive science thought through the organism's thinking and sensing relation to its environment. On the one hand, you have someone like English anthropologist turned cybernetician Gregory Bateson, whose theory of the "ecology of mind" stipulated that thinking and perceiving took place as part of a wider environmental assemblage, rather than through the self-contained subject familiar to earlier renditions of cybernetic thought. On the other hand, you have Chilean cognitive scientists Humberto Maturana and Francisco Varela, who pioneered the theory of autopoiesis and its biological understanding of cognition. This grounded both perception and cognition in the specific embodiment of an organism, with special insistence on neuronal activity and complexity. Downey was intimately familiar with the work of both Bateson and Maturana and Varela. Thus, this section will read Downey's own attempts to think thought and sense more fluidly—embodied in specific elements of *Plato Now*—alongside the prominent ideas just mentioned. The point of this section, however, is not to demonstrate how Downey simply illustrated the insights of Bateson and Maturana and Varela. The situation is more complex, it is a dialogue.

In what follows I will trace how Downey adopted some of these thinkers' ideas while challenging others and offering his own unique interpretation of the nature of and relationship between perception and cognition. First, I will outline the links between Downey's *Plato Now*

and the Allegory of the Cave. Then, I will single out five elements within the performance installation—its looping interactions between mind, body, technology and environment; its privileging of neuronal activity; the use of meditation; the role it gives to shadows; and, finally, what I will call its electromagnetic ecology. Each element will be grounded in a specific component or set of components within the performance installation, and each will be read alongside a key insight from either the work of Bateson or Maturana and Varela to see what kind of resonance or tension arises. While it is true that Downey displays an affinity with the becoming-ecological of sense and thought during the 1970s, his unique contribution ultimately moves beyond this historical moment and is best fleshed out with the help of twenty-first century ecological philosopher Timothy Morton. This is because, like Morton, Downey's understanding of the relation between thought and sense—or more generally, our modes of access to reality—possesses a strong speculative streak that is far more difficult to configure within the empirical conceptual space of Bateson and Maturana and Varela. A major source of that difficulty is Downey's profound belief in the powers of telepathy—something Morton links to the nature of art itself—and a recurrent feature of *Plato Now*'s invisible architectural program. This section will conclude by making the case for the telepathic dimension of *Plato Now* with the help of Morton's philosophy, so as to flesh out the ecological extent of electromagnetism as Downey understood it.

As mentioned above, *Plato Now*'s concern with perception and cognition begins with its relation to Plato's Allegory of the Cave.<sup>31</sup> In very plain terms, the performance installation is a

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<sup>31</sup> Plato introduces the Allegory of the Cave via Socrates in *The Republic*—the relevant excerpts of which Downey includes in the performance installation. In the parable there exists a cave with a single exit to the outside. Within the cave are trapped prisoners, their necks chained to a wall so tightly their field of vision is locked forward. Just behind this wall stands a parapet and just behind that a great fire. Unchained individuals walk along this parapet holding up inanimate objects like statues or chairs while their bodies are concealed. The great fire casts the shadows of these lifeless objects against the wall facing the prisoners, and the prisoners believe these shadows to be the actual contents of reality. Eventually, a prisoner escapes—a stand in for the philosopher. Upon making his way into the

restaging of this parable. The primary correspondence can be found in the fact that, like Plato's Cave, in *Plato Now* we have individuals facing a wall whose surface is enlivened by the movements of shadows. In the original, these shadows are cast by inanimate objects held up by unchained persons the prisoners cannot see, and in Downey's version, the shadows are cast by the live bodies of spectators and performers—a significant point to which I will return. Downey further implicates Plato's Cave by including pre-recorded excerpts taken from *The Dialogues* that would play in the performers' headphones if their neuronal sensors detected the predetermined amount of "alpha waves."<sup>32</sup> These points of contact with the original allegory demonstrate Downey's concern with its philosophical implications.

Plato uses of the Allegory of the Cave to present his Theory of Forms and the basics of Platonic Idealism. At base, Platonic Idealism instantiates an inflexible distinction between conceptual forms and the sense data that derives from them.<sup>33</sup> A hierarchy is thus formed with ideal forms at its apex, secured within the realm of the mind, and positioned over and above their perceptual derivatives. "In very general terms," as philosopher Gilles Deleuze puts it, "the motive for [Plato's] theory of Ideas is to be sought in the direction of a will to select, to sort out. It is a matter of drawing differences, of distinguishing between the 'thing' itself and its

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light of day he is blinded, but eventually realizes what he saw in the cave were just illusions; real objects can only be truly known outside of the cave. He attempts to return to rescue his compatriots, but having adjusted to sunlight he stumbles around the darkness of the cave and appears blinded to the remaining prisoners. The prisoners make the conclusion that to exit the cave is bring great harm upon themselves and so they stay, never glimpsing the light but never knowing an alternative.

<sup>32</sup> There was always the chance no excerpts would play at all if the performer failed to reach the meditative state, or if the neuronal sensors malfunctioned. Downey reprinted these excerpts in an article sharing the title of the performance installation in the magazine *Radical Software*. This article also contains installation-view photographs of the work. Downey, "Plato Now," 6-8.

<sup>33</sup> Downey includes a recording from *Timaeus* that gives a sense of this distinction: "There exists, first, the unchanging form entering no combination, but visible and imperceptible by any sense the object of thought: second, that which bears the same name as the form and resembles it, but is sensible and has come into existence, is in constant motion, comes into existence in and vanishes from a particular place, and is apprehended by opinion with the aid of sensation." See the text cited in the footnote above.



images.”<sup>34</sup> The Allegory of the Cave illustrates this hierarchical difference or distinction making in basic architectural terms; the physical separation of the darkened cave interior and its illuminated exterior maps onto the idealist distinction between the space of perceptual reality and a literally enlightened cognitive domain. That the shadows in the cave are only ever cast by inanimate objects suggests that what is apprehended by our senses in perception relay to us only images, copies, and derivations. The real object, the Form, only exists within the space of the mind, outside the cave as it were. In Plato’s rendering, the destitute and chained prisoners stand in for those unversed in philosophy enough to grant them access to the light of abstraction. Instead, they remain locked in a perpetual imprisonment to the credulity and seeming deception of a literally darkened vision of sensorial life. We know Downey’s vision of this situation is far different, and so now the task becomes understanding how he materializes this vision on the ground in *Plato Now* and in relation to the defining ideas of his theoretical milieu, and beyond.

The first element of *Plato Now* to be discussed can be broadly described as the looping interactions it creates between bodies, minds, technologies and its exhibition environment. Downey was very clear in his sketches and drawings that, however invisible in some cases, there were connective paths between meditating performers, spectators, video cameras, monitors, neuronal sensors, brainwaves, shadows, and the architectural space of the exhibition [fig. 1, 4, 5]. In those two-dimensional renderings of the performance installation, diagrammatic arrows course through each of the elements above, linking them up to one another and indicating *Plato Now* as an assemblage of recursive contact. The more finished drawing, also titled *Plato Now* [fig. 5], makes practically legible how the cognitive activity of the meditating performer might be implicated along with the perceptual activity of spectators—as an arrow leading from

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<sup>34</sup> Gilles Deleuze and Rosalind Krauss (trans.), “Plato and the Simulacrum,” *October* 27 (Winter 1983): 45.

“performers brains in meditation” would eventually find itself looped into a line of vision emanating from the “public.” While these sketches and drawing can hardly be understood as the final word on the performance installation, they do lend support to the idea that Downey envisioned *Plato Now* as capable of bringing together myriad connections between distinct entities and processes as a total, immersive environment.

In this way, Downey demonstrates yet again his affinity with the cybernetic program of human and technological integration—as mentioned earlier with the discussion of invisible architecture’s origins. Here, however, we can get a bit more specific. Julieta González has done more than most to explore Downey’s cybernetic commitments, and it is because of her archival research we know that Downey had written Gregory Bateson’s name as part of a list of personal influences in one of his notebooks.<sup>35</sup> González even notes that “Downey’s lifelong investment in ecology... was very possibly informed by a reading of Bateson’s theories.”<sup>36</sup> Therefore, the idea of total, environmental interaction between distinct entities and processes within Downey’s practice and *Plato Now* can be read in light of the cybernetic theories of Bateson—whose work was briefly introduced in the previous chapter.<sup>37</sup>

Bateson helped push early cybernetics forward by looking beyond the systematic analysis of theoretically closed systems—like Norbert Weiner’s anti-aircraft weapon targeting controls—and into more distributed collectives that encompassed living beings, their tools, and their

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<sup>35</sup> The list is far reaching and includes some surprising juxtapositions, but in most cases, they are either artists or cyberneticians. For instance: Man Ray, Marcel Duchamp, Piero Manzoni, Yves Klein, Antonin Artaud, Joseph Beuys, Claude Shannon, Arturo Rosenblueth, Ross Ashby, Ludwig von Bertalanffy, Warren McCulloch, and Walter Pitts. Albert Einstein makes an appearance as well. Julieta González, “Juan Downey’s Communications Utopia.” In *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 472.

<sup>36</sup> Ibid. 473.

<sup>37</sup> The previous chapter explored Bateson’s theory of communication with the help of James Nisbet, *Ecologies, Environments, and Energy Systems in Art of the 1960s and 1970s* (Cambridge: MIT Press, 2014).

habitable surround.<sup>38</sup> Key to Bateson's argument that cybernetic analysis could expand its scope into more heterogenous assemblages was a reorientation in the location and reach of mind and mental activity. Bateson believed mind not to be exclusively located in the brain of the subject, but rather immanent within the environment and partially embodied across manifold agents inclusive of but also outside the body. In Bateson's most well-known text, *Steps to an Ecology of Mind*, he explains the "immanence of mind" of distributed collectives as follows:

*any ongoing ensemble of events and objects which has the appropriate complexity of causal circuits and the appropriate energy relations will surely show mental characteristics. It will compare, that is, be responsive to difference (in addition to being affected by the ordinary physical "causes" such as impact or force). It will "process information" and will inevitably be self-corrective either toward homeostatic optima or toward the maximization of certain variables.*<sup>39</sup>

There is a more orthodox element of cybernetic thought here insofar as a major criterion of the mental assemblage is still the feedback-oriented tendency towards "homeostatic optima." What is new is the possibility that such a criterion could be collectively strived toward by a whole host of interacting elements.

Bateson's description of the lumberjack cutting down a tree is instructive. A series of causal circuits are arrayed between the mind of the lumberjack, their body, the ax, the tree, and the cuts in the tree.<sup>40</sup> Differences are identified within the interactions of these elements as information—the difference between one kind of ax stroke and its resultant effect, for instance—and the processing of this information is inflected and enriched by the whole of the system.<sup>41</sup>

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<sup>38</sup> For an analysis of Bateson's relation to other dominant interpretations of early cybernetics, see: Magnus Ramage, "Norbert and Gregory," *Information, Communication & Society* 12, no. 5 (August 2009): 735-49.

<sup>39</sup> Gregory Bateson, *Steps to an Ecology of Mind: Collected Essays in Psychiatry, Anthropology, Evolution, and Epistemology* (Northvale, NJ: J. Aronson Inc., 1972). Italics in the original.

<sup>40</sup> Ibid. 323.

<sup>41</sup> Difference is foundational to Bateson's theory of information. For him, information is the difference that makes a difference. Which is to say, when one element of a system detects a difference—like the lumberjack detecting a different mark in the tree due to a different level of force applied to his ax swing—it changes accordingly. The sensed or perceived difference in the world or system generates another difference and this becomes the basis of information processing. Ibid. 321.

This kind of total system interaction is central to Bateson's thought, and he was insistent that no one element could have "unilateral control" over any other, contra the notion that the mind was isolated within the brain as the exclusive and executive source of cognitive activity.<sup>42</sup> Rather, mentality was embodied across, or immanent within, the total collective.

Thinking with Bateson in this way would have made it feasible for Downey to entertain an assemblage where cognitive and perceptual activity were crisscrossed and spread out amongst human and nonhuman entities—much like *Plato Now* does.<sup>43</sup> The circulation of brainwaves within the performance installation might very well mark it out as an interacting "ecology of mind." Here, however, it becomes important to distinguish between mind as a Batesonian, mental network, and brainwaves as electrochemical impulses detectable by the work's neuronal sensors. Doing so leads us to the next component of *Plato Now* under discussion.

While it is true that *Plato Now* offers an ecological space of multiple interactions across distinct entities, it is important to account for the specific privilege afforded to neuronal activity in the performance installation. Brainwaves are referenced multiple times within the *Plato Now* sketches and drawing; "alpha wave detectors," or neuronal sensors, are singled out as one of the work's few materials;<sup>44</sup> and the detection—or not—of the performers' heightened brain activity was what triggered the audiotapes' playback of Plato's Dialogues in their headphones. Thus, there arises a tension between the environmentality of *Plato Now*'s assemblage, and its privileging of interior, electrochemical brain states. Here is where Humberto Maturana and

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<sup>42</sup> Bateson writes "most relevant in the present context, we know that no part of such an internally interactive system can have unilateral control over the remainder or over any other part. The mental characteristics are inherent or immanent in the ensemble as *a whole*." Ibid. Italics in the original.

<sup>43</sup> Downey was just one among many video artists who read and incorporated Bateson's work into their installation practice—especially those collected around *Radical Software*, though this is a point we shall leave for the following section.

<sup>44</sup> The *Radical Software* article titled "Plato Now," referenced throughout the chapter, includes a list of the performance installation's materials: "9 performers / 9 video-channels / alpha-wave detectors / 9 audio recordings / public's shadows." Downey, "Plato Now," 7.

Francisco Varela's theory of autopoiesis and the biology of cognition enter the picture. While Downey did not write these theorists' names down in his personal notebook as with Bateson, González recently explained it was very likely he was familiar with their work.<sup>45</sup> It is in that familiarity we might begin to understand the privileging of neuronal activity in *Plato Now*, but first we must better grasp Maturana and Varela's ideas.

Maturana and Varela achieved international recognition for introducing the notion of autopoiesis to both cybernetics and cognitive science. Autopoiesis, in a general way, means the process by which a given system self-reproduces its internal organization. In their words: "The autopoietic machine continuously generates and specifies its own organization through its operation as a system of production of its own components, and does this in an endless turnover of components under conditions of continuous perturbations and compensation of perturbations."<sup>46</sup> It is important to specify that, even though Maturana and Varela use the word "machine" here, autopoiesis in the strong sense is limited to biological beings.<sup>47</sup> From the single-celled organism to what they call "metacellulars"—organisms that are comprised of components

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<sup>45</sup> The Museum of Modern Art in New York City recently held a conference titled "Reweaving Ourselves: Contemporary Ecology through the Ideas of Juan Downey." The first session, chaired by Julieta González and Javier Rivera Ramos, was an introduction to the cybernetic elements of Downey's practice. During the question and answer session, an attendee asked González if Downey had ever come into contact with Maturana and Varela's work. While she could not point to written evidence that he had, she made it clear it was very likely. She pointed to Downey's repeated trips to Chile in the early-1970s and his many contacts with Chilean intellectuals. The ideas of Maturana and Varela, themselves Chilean, were widely circulated then and held a place of pride within Santiago—the nation's capital and frequent destination of Downey's. For more on the session see: <https://www.moma.org/calendar/events/6749>.

<sup>46</sup> Humberto Maturana and Francisco Varela, "Autopoiesis: The Organization of the Living" (1972), in *Autopoiesis and Cognition: The Realization of the Living* (Dordrecht: D. Reidel Publishing Company, 1980), 79.

<sup>47</sup> An early paper of Maturana and Varela outline their commitment to a mechanistic understanding of biology: "We are thus saying that what is definitory for a machine structure are relations and, hence, that the structure of the machine has no connection with materiality, that is, with the properties of the components that define them as physical entities. In the structure of a machine, materiality is implied but does not enter *per se*." Otherwise put, physical or material embodiment only enters the picture insofar as it impinges on the organizational structure of an entity—whether that entity has a wet and fleshly materiality or a metallic one is, for them, of less importance. Ultimately, their work on autopoiesis leads them to consider biological life in more detail, but there still remains a commitment on their end to a cybernetic leveling out of entities on a mechanistic basis. Francisco Varela, and Humberto Maturana, "Mechanism and Biological Explanation," *Philosophy of Science* 39, no. 3 (September, 1972): 378.

themselves composed of multiple cells, like organs in the body—each engage in autopoiesis. Through metabolic interaction with their environment, they self-reproduce their internal organization, and its integral components, to persist in their living and ward off “disintegration” as long as materially possible. In plainer terms, autopoiesis describes how, for example, the human body will continually regenerate its own cells according a relatively fixed, genetic plan throughout the course of its life. Disintegration, or death, takes place when this process can no longer be metabolically sustained.

The metabolic openness of an autopoietic system is paired with and strongly prescribed by what Maturana and Varela call “operational closure.” It is this feature of operational closure that helps ground the privileging of neuronal activity in *Plato Now*. That is because operational closure puts a premium on the recursive and self-reflexive interactions of the biological nervous system with itself. Maturana appears to arrive at an intuition of operational closure first in 1970 when he writes that “[f]or every living system its particular case of self-referring circular [or autopoietic] organization specifies a closed domain of interactions that is its cognitive domain, and no interaction is possible for it which is not prescribed by this organization.”<sup>48</sup> This means that autopoietic organization of a living thing strongly determines its functional conditions of possibility within its habitable surround. To make synonymous the “domain of interactions” with the “cognitive domain” hints at the role neuronal activity will play in autopoietic theory.

When Maturana and Varela continue working more closely in the following years, the neuronal dimension of operational closure comes more to the fore. Together they explain that “the nervous system’s organization is a network of active components in which every change of relations of activity leads to further changes in relations of activity... In other words, the nervous

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<sup>48</sup> Humberto Maturana, “The Biology of Cognition” (1970), in *Autopoiesis and Cognition: The Realization of the Living* (Dordrecht: D. Reidel Publishing Company, 1980), 39.

system functions as a closed network of changes in relations of activity between its components.”<sup>49</sup> The nervous system interacting with itself according to its particular, biological embodiment becomes the crux of a living being’s capacity for action in the world. Indeed, Maturana and Varela equate cognitive activity with the capacity to act, or “an effective action that will enable the living being to continue its existence in a definite environment as it brings forth its world.”<sup>50</sup> We can read Downey’s privileging of neuronal activity in *Plato Now* as a recognition of Maturana and Varela’s insights. Apart from the many mentions of brainwaves in the sketches and drawing, the activity of performers’ neurons is constantly monitored so as to trigger elements within the performance installation—the potential audio playback of the Dialogues. In this way, the interior cognitive action of the performers becomes an integral element of the work’s invisible architecture.

There is another important tension here, however. While Maturana and Varela’s theories afford a way of understanding Downey’s making operative of brainwaves in *Plato Now* as a source of “effective action,” the monitoring of those brainwaves is linked directly to the act of meditation. I claim this undermines both the idea of operational closure, and a hard and fast, Platonic distinction between thought and sense.

Staying with neuroscience for a bit, American neuroscientist James H. Austin has written extensively on the relations between the science of the mind and meditative practices in his *Zen and the Brain: Towards and Understanding of Meditation and Consciousness* (1999). At first, meditation might appear as a deeply interior, cognitive process—a kind of trained, inward retreat to the space of the concentrated mind. Interestingly, a key feature of *kensho*, or reaching Zen

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<sup>49</sup> Humberto Maturana and Francisco Varela, *The Tree of Knowledge: The Biological Roots of Human Understanding* (Boulder: Shambhala Publications, 1992), 164.

<sup>50</sup> *Ibid.* 29-30.

enlightenment, provides a different understanding of meditation's purpose. Quoting Zen master Katsuki Sekida, Austin writes that *kensho*, in part, defines the realization that "you and the external objects of the world are now unified. It is true that they are located outside you, but you and they interpenetrate each other... there is no special resistance between you and them."<sup>51</sup> This description of meditation's end-goal should strike the reader as deeply contradictory in relation to how Plato saw the interaction between mind and world, and, to some extent, at odds with Maturana and Varela's notion of operational closure. While Zen meditation is just one practice amongst many of other meditative practices, it is noteworthy that it seeks not to wall off the world from the concentrated mind, but rather strives to find that point where sensual reality fuses with a concentrated cognitive process in a recognition of their "interpenetration."

To be clear, I am not suggesting that Downey or any other performer in *Plato Now* reached enlightenment during the exhibition. Nonetheless, it is possible Downey was working with an understanding of meditation similar to that above—as the Zen lifeway was increasingly, if often superficially, popular within the American counterculture at this time.<sup>52</sup> With this in mind, the act of meditation in *Plato Now* can be figured as yet another instance where Downey was working to undermine a Platonic hierarchization of thought and sense, and possibly even overflow the notion of operational closure. At the very least, Downey's positioning of the meditative act as the major performative element of *Plato Now* evinces an understanding of cognitive activity in a more fluid relation with perception. That the neuronal sensors of the performance installation are keyed to a level of brain activity specifically associated with

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<sup>51</sup> James H. Austin, *Zen and the brain: Toward an Understanding of Meditation and Consciousness*, (Cambridge: MIT Press, 1999), 542.

<sup>52</sup> For more on the relation between the American counterculture and Zen Buddhism see, Inken Prohl, "California 'Zen': Buddhist Spirituality Made in America. *American Studies* 59, no. 2, Religion and the Marketplace (2014): 193-206; and R. John Williams, *The Buddha in the Machine: Art, Technology, and the Meeting of East and West* (New Haven: Yale University Press, 2014).



meditative concentration (alpha waves) asks an important question: How to reconcile Downey's interest in the interiority of the brain with the work's insistence that cognitive and perceptual activity are deeply entwined and extended into the world?

For their part, Maturana and Varela devise a way to account for the effectuality of the external world, but it appears less robust than the attention they give to the dynamism of operationally closed nervous systems. Maturana, in 1970, goes as far as saying that "due to the general mode of organization of the nervous system there is no intrinsic difference between its internally and externally generated states of activity, and because each one of its specific states of activity is specifiable only in reference to other states of activity of the system itself."<sup>53</sup> To counteract arguments that such an assertion leads indefinitely towards relativistic solipsism where nothing matters outside of the nervous system, the two thinkers introduce the idea of "structural coupling." They elaborate on this concept in the following way:

In describing autopoietic unity as having a particular structure, it will become clear to us that the interactions (as long as they are recurrent) between unity and environment will consist of reciprocal perturbations. In these interactions, the structure of the environment only *triggers* structural changes in the autopoietic unities (it does not specify or direct them), and vice versa for the environment. The result will be a history of mutual congruent structural changes as long as the autopoietic unity and its containing environment do not disintegrate: there will be a *structural coupling*.<sup>54</sup>

While they are clear that the internal organization of the autopoietic unity remains closed, and is not directed by its external environment, they do make the space for transformative interactions between the unity and its surrounding milieu. Structural coupling indicates the processes where "mutual transformation" takes place between the organism and its environment as both undergo reciprocal change. Maturana and Varela cite the oxygenation of the earth's atmosphere via

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<sup>53</sup> Maturana, "Biology of Cognition," 41.

<sup>54</sup> Maturana and Varela, *Tree of Life*, 75.

prehistoric bacterial respiration, and resultant life's need for oxygen, as a significant example.<sup>55</sup> And yet, the effects of environment in autopoietic theory are only ever relegated to “perturbations” of the organism's sensory surfaces, which are then acted on by an operationally closed nervous system. It appears as though the true source of transformative action still resides within the internal cognitive action of the living being, no matter how triggering its environment may be.

Downey's deployment of shadows in *Plato Now* seem to suggest something altogether different, with consequences both for Platonic Idealism and the ideas of Maturana and Varela. Remember in the original allegory that the shadows upon the cave wall were always cast by inanimate objects. Yet now, they are cast by the living bodies of spectators and performers. They are not static, but active and, in invisible architectural terms, *activating*. In Downey's sketches and drawing, the many arrows circulating between the explicitly labeled shadows and the performers and technical media indicate that these spectral outlines—gradients of visible electromagnetic radiation—are key components of the work. When we take into account their allegorical significance within Plato's Cave, the fact that *Plato Now*'s shadows are not cast by inanimate objects totally upends the idea that perceptual reality is somehow derivative from cognitive activity.

In quite an elegant way, Downey is suggesting that the contents of perception have an effectuality and reality to them that defies the distinction Plato sought to enforce. Moreover, it might also be a way of saying that our perceptual environment contains much more than “perturbations,” autopoietically speaking, and instead, spectral beings that complicate any easy distinction between some cognitive interior and a perceptual exterior. This point can be

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<sup>55</sup> Ibid. 102

corroborated if we keep in mind the function of the meditators when viewed from the Zen perspective above. Both the meditators and the shadows they are invisibly communing with work together in suggesting a more fluid and affective relation between cognition, perception, and the sensual world.

If we bring back the telepathic features of invisible architecture introduced earlier in the chapter, we can further clarify the reorientation Downey is proposing here.<sup>56</sup> What better way to understand the relationship between closed-eye meditators and the lively shadows they cannot immediately see than some sort of telepathic conduit of invisible architecture, one that crisscrosses cognitive and perceptual domains? Maturana and Varela once said that “[w]e do not see what we do not see, and what we do not see does not exist.”<sup>57</sup> I have a hard time believing Downey would agree, especially within the context of *Plato Now*. Perhaps Downey imagined the meditator/shadow connection as an exchange of electromagnetic energy between the radiating signals of the brain and the light gradients of the shadows. Rendered in allegorical terms, such an electromagnetic energy exchange would suggest a further permeability between the exterior of our perceptual world (represented by the shadows), and the interior of an already permeable thinking mind (represented by the meditators). This is ultimately a highly speculative notion, but one Downey’s aesthetics of energy seems to endorse within the shadowy confines of *Plato Now*.

This brings us to one of the last elements of *Plato Now* to be explored in this section. It is quite like the first—the looping interactions between different components of the work—but now with an important qualification that builds upon the insights above. Rather than understand *Plato*

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<sup>56</sup> Telepathy is figured as a crucial feature of Downey’s invisible architecture, and it is the shared electromagnetic constitution between the electronic signals of certain media technologies and the signals of the brain that allows him to think this through. He states as much when he says: “The process of thinking, regardless of its artificiality (computers) or naturalness (brains) is also electromagnetic signals.” Downey, “Architecture, Video, Telepathy,” 341.

<sup>57</sup> Maturana and Varela, *Tree of Knowledge*, 242.

Now as a kind of Batesonian ecology of mind, I am arguing this performance installation is best understood as an “Downeyian” ecology of electromagnetism. This move is necessary if we are to grasp—as per the main claim of this chapter—how Downey positions electromagnetism as an ecological media. If, for Bateson, mentality is the connective and communicative force of his ecologies, with distinct entities engaging in the shared processing and optimization of information, much like a distributed mind would do, here it is electromagnetic energy that serves to make this space ecological. More specifically, electromagnetism is figured as that which is—to use Downey’s phrasing—“commonly shared” by the performance installation’s different components, and what allows them to be thought as an interactive assemblage.<sup>58</sup> It is, simultaneously, what activates the CCTV cameras and monitors; the audio equipment’s magnetic tape; the electrochemical impulses of the performers’ minds, and the neuronal sensors designed to detect them; and the light that casts the spectators’ allegorically significant shadows. Each, and the connections among them, rely on electromagnetism as a form of ecological media—an energetic in-between that brings them into meaningful contact.

Rather than operationally closed nervous systems, the performers and spectators of *Plato Now* might be better characterized as energetically open participants “telepathically cellular to an electromagnetic whole.”<sup>59</sup> To view any of the nine CCTV monitors of the performance installation, dimly glowing in the darkness, is to partially grasp a release of electromagnetic energy whose dynamics are materially inflected by other electromagnetic elements within the space. Remember chapter one’s brief discussion of American physicist David Bohm’s concept of “implicate and explicate orders.”<sup>60</sup> This is the idea that particles within any electromagnetic field

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<sup>58</sup> Downey, “Architecture, Video, Telepathy,” 343.

<sup>59</sup> Downey, “Technology and Beyond,” 2.

<sup>60</sup> Laura Marks engages David Bohm’s theory in her “How Electrons Remember,” *Touch: Sensuous Theory and Multisensory Media* (Minneapolis: University of Minnesota Press, 2002), 164-78. This was a critical resource for the

retain a connection to their source and are materially grounded to it, no matter how far they may stray—something made possible only by the strange entanglements and nonlocality of quantum “wave-materials.”<sup>61</sup> Keeping this in mind allows us to think the different electromagnetic frequencies of *Plato Now* as tethered together in what could be understood as a distinctly ecological or environmental way. Of course, whether these connections could be immediately felt is a different matter, which occasions us to keep in mind the suprasensible immersion of invisible architecture introduced in the previous section. To find oneself in *Plato Now*—either as spectator or performer—is to be immersed in an electromagnetic ecology that is mostly suprasensible, but still has the potential to resolve itself into awareness in unexpected ways. After all, for Downey, “[i]t is upon the moving border between the neurally [sic] detected and the yet to be perceived that life bursts.”<sup>62</sup>

Which is to say, to think with Downey is to entertain and foreground the unexpected. In his “Architecture, Video, Telepathy: A Communications Utopia” (1977), Downey plainly states that the “[t]he aesthetic experience places us face to face with mystery in the process of resolution. It is the nature of art to bring us to grips with the yet undefined.”<sup>63</sup> So, as highly speculative as the idea of a telepathic, electromagnetic ecology might be, it can be just another “mystery in the process of resolution” that Downey figured as the proper concern of aesthetic experience.

Interestingly, Downey shares this vision of aesthetic experience to some degree with contemporary ecological philosopher Timothy Morton. For Morton, to have an aesthetic

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section “Physics Lost in the Field” of chapter one, especially its discussion of quantum mechanics. For more on Bohm’s work see: David Bohm and Basil J. Hiley, *The Undivided Universe* (London: Routledge, 1993).

<sup>61</sup> “Wave-material” was Downey’s way of describing what electromagnetism was. In the first chapter I read this as an implicit acknowledgement of the wave/particle duality revealed by quantum mechanics. See: Downey, “Architecture, Video, Telepathy,” 343.

<sup>62</sup> Ibid. 344

<sup>63</sup> Ibid.

experience is akin to receiving “a love letter from an unknown source, a nonlocal *telepathic* mind-meld with something that might not be conscious, might not be sentient, might not be alive, might not even exist... a not-me experience arising in my inner space that bears the trace of a specter.”<sup>64</sup> That is, to find oneself affected by a work of art is to be moved by a distant, “non-local,” or otherwise discontinuous entity not rationally understood as possessing such capacity for action.<sup>65</sup> Morton’s use of “non-local” is especially important here because it is borrowed from the lexicon of quantum mechanics—something we know Downey was invested in. Non-local interaction is made possible by entanglement: the capacity for particles once in contact to affect one another instantaneously from separate points in space-time. This is otherwise described as “quantum non-locality,” or, somewhat derisively by Albert Einstein as “spooky action at a distance.”

It appears as though both Downey and Morton turn to the quantum in order to explain the inexplicable effectuality of art and aesthetic experience, in much the same way they turn to the notion of telepathy to do the same. We could imagine Downey agreeing with Morton that the aesthetic experience is similar to “telepathy or telekinesis, something like agency or liveliness emanating from something like an inanimate being, a painting or a piece of music” or perhaps the shadows or CCTV monitors of *Plato Now*.<sup>66</sup> For both Downey and Morton, all this seems to

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<sup>64</sup> Timothy Morton, *Humankind: Solidarity with Nonhuman People* (London: Verso Books, 2017), 66. Italics added.

<sup>65</sup> At least as concerns his *Humankind*, Morton’s description of the aesthetic experience is typically explained in relation to painting, though this might be because it is perhaps the most recognizable of artforms. His discussion of finding beauty in the *Mona Lisa* is quite instructive: “If you think it’s a certain feature of the *Mona Lisa*, say the smile, then a thousand photocopies of the smile should be a thousand times more beautiful than the actual experience you are having with it. But this can’t be true. Or, if you think it’s a certain feature of your response that you can locate, for example in your brain, for instance a certain neurotransmitter, then a thousand pills consisting of that neurotransmitter’s active ingredients should in turn create an experience a thousand times more beautiful. But it won’t. It will kill you.” The point of this passage is to indicate, in a quite casual way, that there is something fundamentally irreducible about the experience of beauty and aesthetics more generally. It is in this commitment to the irreducibility of aesthetic experience that Downey and Morton find a compelling common ground. Ibid. 88.

<sup>66</sup> Ibid. 53.

suggest that to be open to the effectuality of aesthetic experience is to necessarily entertain a seemingly incomprehensible connection between entities that are quite distinct. At base, Morton lends contemporary philosophical support to Downey's own characterization of art and aesthetics as generating "mystery in the process of resolution" and the "yet undefined."

Bringing Downey into conversation with Morton is also important because it foregrounds the necessary role that speculation plays in attempting to understand a work like *Plato Now* with the concepts that Downey himself provides, like the telepathy of invisible architecture. After all, Morton considers himself an Object-Oriented philosopher and participates in the turn of speculative realism. Indeed, along with Graham Harman, they are perhaps the most popular proponents of Object-Oriented Ontology in contemporary philosophy. So, if we can accept that speculative thought enriches our understanding *Plato Now*, we must be open to the idea that something like telepathic action did take place during the exhibition.

Let us take a final glimpse of the performance installation to drive this point home. Remember that *Plato Now* used nine closed-circuit video cameras and monitors to show the faces of the performers in meditation [fig. 3]. Seeing these images of meditating faces can be read almost like a prompt to speculate or imagine what might be going through their minds. Seeing a face deep in concentration has an affective charge that innately spurs one to entertain that impossible question of what someone else might be thinking. This question can be understood as one of the basic motivating forces for believing in telepathy at all—an attempt to feel the mind of the other in the same way one feels her own. That it is analog video providing this image is itself significant in the context of *Plato Now*'s potential telepathic dimension.

Many contemporaries of Downey—like the video artists affiliated with *Radical Software*—and subsequent art historians, have lighted on the fact that analog video occupied a

special place in the historical constellation of artistic media. This was because, as video art historian Ina Blom describes, “unlike the stable photochemical imprint of film and photography, videotape governs a flow of signals that are always live and that may be modified at any moment.”<sup>67</sup> Indeed, this technical fact meant that video doesn’t produce images at all—in the way that other mediums do, as static marks upon or in the forming of a material support—but “a live memory of the world itself, shaped by the technical/perceptual apparatus.”<sup>68</sup> In *The Autobiography of Video* (2016), Blom even argues that analog video could be considered a kind of proto-subject on the grounds that it processes, stores, and modulates temporality—hence why she describes it as a “memory technology.”<sup>69</sup> When we take these points together, the simple act of viewing the monitors of *Plato Now* is enriched; those monitors are now understood as relaying a live, energetic perception of a mind in deep in thought, stimulating the thought of whoever beholds it—to use Morton’s characterization again: “a not-me experience arising in my inner space that bears the trace of a specter.”<sup>70</sup> If ever there were a moment to contemplate—or, maybe more appropriately, *speculate* as to the existence of—telepathy, Downey’s monitors provide it.<sup>71</sup>

And so, as regards *Plato Now*, what we are left with is an aesthetic environment in which electromagnetism is figured as an ecological media facilitating potentially telepathic contact

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<sup>67</sup> Ina Blom, “The Autobiography of Video: Outline for a Revisionist Account of Early Video,” *Critical Inquiry* 39 (Winter, 2013): 280.

<sup>68</sup> Ina Blom, “Video and Autobiography vs. the Autobiography of Video: An Historical View of the Ambiguities of Self-monitoring Technologies,” *The Psychopathologies of Cognitive Capitalism: Part Two*, Warren Neidich, ed., (Berlin: Archive Books, 2013), p. 52.

<sup>69</sup> Blom turns to the work of Maurizio Lazzarato specifically to make the argument that video is a kind of proto-subject. This is predicated on a Bergsonian ontology that renders the subject as a modulator of a constant flow of images. Video offers a particularly well-suited media technology to ground this idea. For more on this topic, see: Maurizio Lazzarato, “Machines to Crystallize Time,” *Theory, Culture & Society* 24, No. 6 (2007): 93–122.

<sup>70</sup> Morton, *Humankind*, 66.

<sup>71</sup> To be sure, the telepathic dimension of *Plato Now*’s electromagnetic ecology is far from immediately legible; and thus, whether or not spectators could really grasp it remains an open question. One could certainly imagine—without all the context above—leaving the performance installation’s darkened space quite confused, and this section has done much to try and shine light into those shadowy corners. But this very possibility of not being able to *see* what’s going in *Plato Now* seems always already implicated in the concept of invisible architecture that guides it—meaning Downey would not have wanted it any other way.



amongst a host of disparate entities, like video, minds, and shadows. Downey makes fluid the Platonic distinction between thought and sense so as realize their shared, electromagnetic nature, and thus explore what possibilities such a realization provides. To summarize: it has been shown how part of this environment borrows from the insights of Bateson, insofar as he too understood the world from the vantage of heterogenous, ecological assemblages; it has likewise been shown how this environment focuses on the neuronal activity of its participants, in ways that are indebted to the insights of Maturana and Varela. Yet, in a significant way, *Plato Now* and the invisible architecture that defines it are irreducible to these cybernetic and cognitive scientific advancements. To think with Downey and his commitment to the aesthetic affordances of electromagnetism ultimately leads out of the early-1970s conceptual space which he is routinely thought to embody and into the contemporary ecological thought of the twenty-first century. And yet, while I hope the telepathic, electromagnetic ecology of *Plato Now* has been convincingly argued, what remains left to be explored is how this notion of ecology, and its rendering of electromagnetism as an ecological media, relate to other formulations of ecology within Downey's art historical moment. That is the task of the final section.

### An Ecology both Real and Speculative

While Downey was certainly not the only video artist to deploy ecological concepts in his practice, the way in which he did so makes him unique in his art historical moment. This section will read Downey's ecological vision against two other formulations of ecology popular amongst his contemporaries, so as to throw into relief what makes Downey's ecological rendering noteworthy in context. For the sake of time and clarity, I will limit this comparative reading to the two most popular formulations of ecology amongst the early North American video art scene,

especially those affiliated with the video art magazine *Radical Software* (1970-1974): the Batesonian ecology—introduced in the previous section—and the idea of media ecology—a concept developed by education scholar Neil Postman in 1968.<sup>72</sup>

Before outlining the major differences between Downey’s vision of ecology and those just mentioned, let me be clear about what I see him suggesting. Downey’s electromagnetic ecology attempts to ground ecological relationality in the exchange of a real, material energy (electromagnetism) while simultaneously entertaining the possibility that such an exchange allows for unanticipated and speculative kinds of connections (like telepathic communication). We have seen how this works in the previous section. Electromagnetism is what connects the different elements of *Plato Now* together so as to undermine the Platonic hierarchization of thought and sense. What emerges from the linked fluidity of these connections and modes of access to reality is an electromagnetic ecology saturated with telepathic potential. This can be understood as a kind of aestheticizing of ecology, if we keep in mind that Downey’s understanding of the aesthetic experience is necessarily the confrontation of the unknown. This means that, for Downey, we must try to acknowledge at one and the same time that ecological interaction takes place in and through the real, material-energetic environment of our electromagnetic universe, and yet might generate possibilities that cannot be anticipated by scientific rationality. I claim this is a kind of contamination of the reality of ecology with

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<sup>72</sup> In the pages of *Radical Software*, one could find discussions of Bateson’s work and the practical implications of media ecology for video artists. Bateson himself published articles in the magazine: Gregory Bateson, “Restructuring the Ecology of a Great City,” *Radical Software* 1, no. 3 (1971): 2-3; Gregory Bateson, “Up Against the Environment or Ourselves,” *Radical Software* 1, no. 5 (1972): 33. Furthermore, a keyword search of “media ecology” in the online archives *Radical Software* turns up 221 relevant items. Media ecology has also been a useful heuristic for understanding early video within art history. Two notable examples are David Joselit’s *Feedback: Television Against Democracy* (Cambridge: MIT Press, 2007); and William Kaizen, *Against Immediacy: Video Art and Media Populism* (Hannover: Dartmouth University Press, 2016).

aesthetic and speculative potential. Or, put differently, a rendering of the ecological world seen through Downey's guiding commitment to a critical unknowability.

In the previous section, we introduced Bateson's understanding of ecology. It is an "ecology of mind," an ecology whose relationality is carried along by a more expansive vision of mental activity. Rather than mind be an exclusive property of the thinking subject, Bateson figures it as enmeshed in, and collectively enriched by, heterogenous and environmental assemblages.<sup>73</sup> Downey and many other video artists were attracted to this idea because it provided them a heuristic by which they could entertain a more holistic vision ecological life—not as something relegated to an exterior nature, but equally encompassing of thinking beings, their apparatuses, and their lived surround. As Julieta González has noted, Downey was an avid reader of Bateson, and the sheer heterogeneity of the assemblage that is *Plato Now* is due in large part to his familiarity with the Batesonian rendering of ecology. And yet, Downey's familiarity with the work of Maturana and Varela allowed him to factor in interior neuronal activity to *Plato Now*'s ecology in a way less indebted to Bateson's ideas.

But what further distinguishes Downey from Bateson, as well as Maturana and Varela, is that—whether we are talking ecological connections amongst different entities, or neuronal connections amongst brains within an ecology—the media of those connections, that which allows the connections to obtain, is, for Downey, electromagnetism. This is what it means to say that Downey figures electromagnetism as an ecological media, and why his vision of ecology is electromagnetic. This grounds the connective tissue of Downey's ecologies in a real, material-

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<sup>73</sup> Bateson helpfully contrast his ecology mind with the development of Freudian psychology: "Freudian psychology expanded the concept of mind inwards to include the whole communication system within the body—the autonomic, the habitual, and the vast range of unconscious process. What I am saying expands mind outwards." Bateson, *Steps to an Ecology of Mind*, 468.

energetic force, rather than something like Bateson's "transforms of difference," or the "patterns which connect," that are more interested in information than matter or energy.<sup>74</sup>

That a primary feature of Downey's ecological vision is its electromagnetic nature also suggests we can read him against the development of media ecology. The concept of media ecology was first introduced by education scholar Neil Postman in 1968, and then taken up by numerous video artists in the following years—especially those affiliated with *Radical Software*, who were profoundly interested in understanding how the new and portable technology of video related to the mediascape of broadcast television.<sup>75</sup> Media ecology provided the means for this because, in Postman's definition, it "looks into the matter of how media of communication affect human perception, understanding, feeling, and value" within an environment that is itself understood as a "a complex message system which imposes on human beings certain ways of thinking, feeling and behaving."<sup>76</sup> Which is to say, media ecology attends to the organizational and conditioning effects of communications technologies within a broader surround. This equation of environments with "complex message systems" and interest in organization signals the influence of the cybernetic paradigm on media ecological thinking, and thus, for artists

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<sup>74</sup> "Transforms of difference" are key to Bateson's theory of information as "the difference which makes a difference" referenced in the previous section. His theory of "the patterns which connect" is broached in his later work *Mind and Nature: A Necessary Unity* (Cresskill: Hampton Press, Inc., 2002), original published in 1979. For an overview of this concept, see: Richard J. Borden, "Gregory Bateson's Search for 'Patterns Which Connect' Ecology and Mind," *Human Ecology Review* 23, no. 2, Special Issue: Human Ecology—A Gathering of Perspectives: Portraits from the Past—Prospects for the Future (2017): 87-96.

<sup>75</sup> The editorial of the first issue of *Radical Software*, while not mentioning media ecology by name, hints at how they were thinking video in relation to the televisual environment: "When you get into mass communications systems other than the telephone not only is control centralized, but decision-making is an institutional rather than a people process. Fortunately, however, the trend of all technology is towards greater access through decreased size and cost. Low-cost, easy-to-use, portable videotape systems, may seem like 'Polaroid home movies' to the technical perfectionists who broadcast 'situation' comedies and 'talk' shows, but to those of us with as few preconceptions as possible they are the seeds of a responsive, useful communications system." Beryl Korot, Phyllis Gershuny, and Michael Shambert, "Editorial Statement," *Radical Software* 1, no. 1 (1970), unpaginated.

<sup>76</sup> Neil Postman, "The Reformed English Curriculum," in *High School, 1980: The Shape of the Future in American Secondary Education*, Alvin C. Eurich, ed (New York: Pitman, 1970), 161. Quoted in Kaizen, *Against Immediacy*, 126-7.

already interested in the cybernetic ecologies of Bateson, media ecology was a natural fit. From this vantage, it might seem as though Downey too would have found much use in media ecology. This, however, would suppose that Downey's interest in electromagnetism and its ecological potential is bounded by the fact that communication technologies operate electromagnetically—and that is not the full story, at least when read from the perspective of an aesthetics of energy.

While it is true that Downey incorporated much media technology in his art, and thought deeply about how communication takes place through them at environmental levels—this leaves unattended the fact that he believed electromagnetism to be more than an animating force of *just* electronic apparatuses like video, television, or radio. For him, brains too operate electromagnetically, and could conceivably communicate telepathically through it. So, while Downey was no doubt interested in how communications technologies create ecological relations, his expansive understanding of electromagnetism's presence in the world allowed him to think beyond ecologies defined solely by technical media. This begins to signal the difference of Downey's ecological vision in relation to the ecological imaginary of his historical moment.

Even though the points above are more theoretical, I want to suggest that we can detect the difference between Downey's electromagnetic ecologies and those of his contemporaries in more obvious and concrete ways—at the level of the tone or atmosphere of the works that embody his ecological vision, when compared to the works of his fellow, ecologically-mined artists. For this brief comparative reading, I will invoke the exhibition *Process and Meta-Process* by video artist Frank Gillette. There are a few reasons for this choice. First, Gillette had written about the uses of media ecology for video within *Radical Software* and elsewhere, and was also an avid reader of Bateson's theories—meaning he is emblematic of conceptual trajectory

outlined above.<sup>77</sup> Second, *Process and Meta-Process* was also exhibited at the Everson in 1973, like *Plato Now*, and documents of it appear mere pages away from the documents of *Plato Now* published in the “Video and Environment” issue of *Radical Software* from that same year.<sup>78</sup> That these two artists were so intellectually close, and their works effectively appear in the same time and place, they provide a neat glimpse into this moment of video art history, and can clarify what makes Downey’s ecological vision unique within its context.

*Process and Meta-Process* was composed of three single-screen videotape works displayed in the Everson’s ground floor video gallery, as well as six, interconnected, multi-channel, closed-circuit television installations spanning all four of the Everson’s upper galleries [fig. 9]. An announcement for the exhibition described these installations as “information environments” meant to demonstrate an affinity between “biological, ecological and technological systems.” The announcement continues: “Implicit in Gillette’s thinking is the belief that the technology man has used to extend his dominance over nature has been so successful that it threatens to virtually destroy him and his environment... [These installations suggest] that man reunify his concepts of nature with his concepts of technology and that he reconceive them as being two parts of the same whole.”<sup>79</sup> There is a similarity between this statement and what Downey was proposing in “Technology and Beyond,” insofar as Downey too

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<sup>77</sup> For more on Gillette’s writings about media ecology and much else, see his *Between Two Paradigms* (New York: Gordon and Breach, 1973), and the recently released, first of its kind, art historical monograph on him: Susan Anker and Sabine Flach, eds., *Axis of Observation I: Frank Gillette* (Bern: Peter Lang, 2018). In terms of Gillette’s reading of Bateson, no less an authority on this moment of early video history than Paul Ryan, a contemporary of both Gillette and Downey, claims that Gillette is perhaps the artist most responsible for aesthetically realizing Bateson’s theories within the video medium. For more on that see: Paul Ryan and Roy Skodnick. “Radical Software and the Legacy of Gregory Bateson.” *Art Journal* 68, no. 1 (Spring 2009): 111-113.

<sup>78</sup> Images, diagrams, and texts of Gillette’s *Process and Meta-Process* exhibition appear under the heading “SIX MATRICES” in that issue and are reproductions of the same images, diagrams, and texts contained in the Everson’s promotional material for the show, which will be quoted below. For more, see Frank Gillette, “SIX MATRICES,” *Radical Software* 2, no. 5: Video and Environment (Winter, 1973): 23-9.

<sup>79</sup> *Process and Meta-Process*, Frank Gillette: Everson Museum of Art, Syracuse New York, May 19-June 18, exhibition brochure, archival material attained by request from the Everson Museum of Art, Syracuse, New York., unpaginated.

believed that the present-day uses of technology were threatening “ecological balance” and must be countered by using technology itself to “reweave ourselves into natural energy patterns.”<sup>80</sup> However, this superficial similarity belies a more profound difference that obtains at the level of *Process and Meta-Process*’s actual installations.

A sleekness and sense of containment are immediately noticeable within Gillette’s “information environments” that begin to hint at where his and Downey’s ecological visions deviate. Gillette’s *Terraquae* [fig. 10], housed in Gallery C, is noteworthy in this regard. It is comprised of six terrariums positioned atop white, wooden platforms, together measuring 9 ft. high, 6 ft. long and 2 ft. wide, with CCTV cameras mounted at their tops. The exhibition brochure quoted above describes their contents: “Each case houses an evolving life cycle: metabolic exchange, symbiosis, birth/growth and decay/growth. The first case contains agar, spores and bacterial molds; the second, iguanas and geraniums; the third, snails, slugs and insect larva; the fourth, tortoises and tarantulas; the fifth, shell life, crabs and crickets.”<sup>81</sup> Effectively, Gillette is offering six, mini-ecologies under the watchful eye of closed-circuit video. The video feeds are then circuited, as are all the other live video feeds from the exhibition, to a bank of monitors titled *Integration Matrix*, which is positioned along a wall in Gallery C parallel to the row of terrariums. A spectator could either watch the creatures themselves, or see them from the top down on the row of monitors, both in real-time and at various intervals of delay. To be clear, *Terraquae* is just one installation within *Process and Meta-Process* that provides an opportunity for the observation of ecological interaction. In *Subterranean Field*, also in Gallery C, spectators can watch as termites eat their way through cherry wood veneers housed in a glass case; and

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<sup>80</sup> Downey, “Technology and Beyond,” 2. The similarity here could be accounted for by both artist’s interest in the work of Bateson, who was also calling for more sustainable uses of technology and a more holistic vision of how technology, the natural environment, and human beings related to one another.

<sup>81</sup> *Frank Gillette: Process and Meta-Process*, unpaginated.

*Gestation/Growth*, in the adjacent Gallery D, uses an incubator to hatch chicken eggs, with the chicks eventually making their way into a geodesic dome enclosure. In both instances, closed-circuit video keeps an unblinking eye as these processes unfold.

While this is not an exhaustive accounting of *Process and Meta-Process*, I want to highlight the inescapable fact that it comes across as a kind of security control room or tightly surveilled laboratory. That is its tone or atmosphere. No doubt, the inclusion of various forms of biological life here conjures an ecological dimension, but it is difficult not to feel as though it is a sterile one—composed of endlessly monitored, contained, and segmented slices of ecological interaction. Of course, this is due in part to the restrictions of the institution, as having crickets or lizards running amuck in the galleries would be more trouble than most museums are willing to put up with. Nonetheless, Gillette’s ecological vision, at least as far as *Process and Meta-Process* is concerned, relies on a clear logic of segmentation and spatial separation so as to make itself legible. Put differently, it subjects ecological interaction to observation, organization and control.

Seeing as we are already familiar with *Plato Now*, and the differences between that work and Gillette’s “information environments” are so obvious as to cease being productive for the sake of argument, let me briefly introduce a work of Downey’s that also contains biological life, ecological interaction, and likewise embodies his ecological vision. In 1971 Downey exhibited *Life Cycle: Soil + Water + Air = Flowers + Bees + Honey* at various venues, including the Everson [fig. 11]. In this installation, Downey positioned an active beehive adjacent to a flower bed, and used video to feedback the activity of the bees to a closed-circuit monitor nestled amongst the flowers. As a safety precaution, the whole installation was cordoned off with a thin screen, but even this suggests a permeability not afforded by the glass walls of a terrarium.



Now, I want to highlight a simple yet profound point about *Life Cycle*. The feedback monitor is not outside of the system, as it was in works like *Terraquae*, *Subterranean Field*, or *Gestation/Growth*. Rather, with its screen facing upward and tilted askew, it looks as if the monitor was accidentally dropped in a verdant field. Instead of a clean separation from the ecological interactions on offer, video finds itself here immersed in a teeming, literally buzzing, insectile and vegetal space. It has been suggested that bees are sensitive to Earth's magnetic field, and perhaps Downey believed they could meaningfully interact with video's electromagnetic emanations in their own way—much as the performers and spectators would in *Plato Now*.<sup>82</sup> Indeed, the upward orientation of the monitor screen also suggests it is the bees who are meant to watch, rather than spectators from afar. *Life Cycle* might then be understood as yet another construction of invisible architecture, though one inhabited foremost by insects and plants rather than humans. Thus, *Life Cycle* embodies Downey's idea of an electromagnetic ecology in a compelling way deeply at odds with the ecological vision of Gillette.

The difference I want to highlight between these two artists is that in Downey's case, his ecological vision realizes itself in unexpected ways while maintaining a resolute commitment to the material-energetic reality of electromagnetism's place in our (and all life's) world. However indebted Gillette's work is to Bateson's more expansive and holistic vision of ecological and cybernetic interaction, there is nonetheless a kind of tension between that indebtedness or conceptual affinity and the basic organization of *Process and Meta-Process*—with its glass tanks and the banks of monitors in modular arrays, the top-down positions of CCTV cameras. That is, there is a tension between allowing ecological interaction to happen in its own messy and

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<sup>82</sup> Clarence Collison, "Bees and the Magnetic Field: Is there a Pull?" *Bee Culture: The Magazine of American Beekeeping*, accessed January 27, 2021, [https://www.beeculture.com/a-closer-look-22/#:~:text=Honey%20bees%20are%20sensitive%20to,\(Fe3O4\)%20in%20their%20abdomens.](https://www.beeculture.com/a-closer-look-22/#:~:text=Honey%20bees%20are%20sensitive%20to,(Fe3O4)%20in%20their%20abdomens.)

unpredictable ways, and the technical or organizational means by which those interactions are made legible.

Whereas for Downey, by comparison, it almost feels like his ecologies are almost too messy or productive of the unexpected—at the risk of being nearly indecipherable or *dark*. I am using “dark” in the sense that Graham Harman understands Morton to be using it in Morton’s *Dark Ecology: For a Logic of Future Coexistence* (2016). Harman explains that “[o]ne of the central ideas on which OOO is based is the idea that the world is always more than what humans perceive or think about it, that the world is always a surplus. This is what I think Morton really means by ‘dark ecology,’ the darkness there means we can’t get to the things, everything withdraws to some extent.”<sup>83</sup> Which is to say, differently, that when an ecology is understood along the theoretical lines pertinent to this dissertation, there is necessarily a degree of unknowability to how its relations emerge and are enacted. This is also how Downey understands ecological interaction to take place by electromagnetic means—a force that similarly withdraws, as we know from the previous chapter. Once electromagnetism is figured as the media of an ecological space, that space becomes both materially and energetically real, yet productive of unexpected and strange connections. It is in this making room for the strange and unexpected within the ecological imaginary that Downey’s ecological vision stands out from his contemporaries.

To borrow a term important for Morton, we can finally say that Downey’s vision of ecology is “weird.” “In the term *weird* there flickers a dark pathway between causality and the

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<sup>83</sup> Graham Harman, “Morton’s Hyperobjects and the Anthropocene,” filmed at Samfundshuset Kirkenes, Kirkenes, Norway, November 26, 2015, video, 37:30, [https://www.youtube.com/watch?v=Id4FF7JO2wU&ab\\_channel=SonicActs](https://www.youtube.com/watch?v=Id4FF7JO2wU&ab_channel=SonicActs)

aesthetic dimension.”<sup>84</sup> This will bring us full circle in terms of the section’s opening claim that Downey contaminates ecological relationality with aesthetic and speculative potential. For an ecology to be “weird” in this way means that certain causal relations can be observed—whether within a performance or installation modeled ecologically or within this or that biome studied by an ecologist—but that such causalities operate in ways that are ultimately difficult to pin down.<sup>85</sup> After all, it is certainly *weird* that Downey’s bees might be interacting with video in ways we cannot comprehend or performers in *Plato Now* might be communing with shadows they cannot see—though he does furnish us the means by which we could make sense of these connections in the form of invisible architecture. In any case, we have seen already that both Downey and Morton agree that aesthetics is all about coming face to face with strange, seemingly inexplicable connections or “mysteries in the process of resolution.” To insist that ecology has an aesthetic dimension is to say that ecological interactions do take place, but they do so along channels and pathways whose reality is, to some degree, inscrutable and thus share an affinity with aesthetic experience. While Morton’s philosophy intends to shine light on the strange machinations of ecology in the twenty-first century, it is important recognize Downey’s prefiguring role in the development of these ideas.

Even though it would take more space than is presently available, I want to conclude this section with a brief speculation as to why reading Downey’s practice through an aesthetics of energy clarifies the uniqueness of his ecological vision in ways less easy to do than reading his practice from the vantage of cybernetics. I wager that it is because the cybernetic paradigm, in its

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<sup>84</sup> Timothy Morton, *Dark Ecology: For a Logic for Future Coexistence* (New York: Columbia University Press, 2016), 5.

<sup>85</sup> In *Dark Ecology*, Morton uses the example of how turning on one’s car in the morning scales up, after billions of ignitions, to global warming and planetary devastation. The connection between the two—while mediated by the very real ecological environment of our biosphere, susceptible as it is to high concentrations of carbon emissions—is not immediately obvious yet catastrophically present. Ibid. 8.

insistence on endless organization, prediction, and control—paired with the disembodied logic of information—leaves little room for the unexpected or unknown so critical to Downey’s art. If everything is viewed as, and has its materiality subsumed by, flows of information, then where might the strange or weird be expected to enter? Where does the strange or weird enter in the cybernetically, Batesonian and media ecologically influenced aesthetics of containment in *Process and Meta-Process*? Of course, the concept of information does allow cybernetic thought to think together different entities and processes—creating juxtaposition who themselves might appear strange or weird at first glance—but the consequence is a sidelining of material and energetic embodiment that is productive on its own of new and unforeseen relations. The aesthetics of energy puts Downey’s commitment to electromagnetism first, as a media and medium for his art, and examines how its energetic materiality leads towards—in the case of this chapter specifically—ecologies both real and speculative. Stepping outside the frame of cybernetic thought, and distancing oneself from its totalizing logic and empirical rationality, can—as I hope this dissertation will continue to make clear—shine light on the contributions of Downey’s practice that have thus far gone unnoticed.

### Conclusion

Implicit in the idea that an ecology can be understood on electromagnetic terms is the recognition that ecologies are subject to and sources of energetic transformation. Downey’s more speculative electromagnetic ecologies also have a more grounded dimension once we acknowledge the different ways electromagnetic energy—in the form of sunlight—becomes the first stop in the terrestrial web of ecological relationality that forms our biosphere. From this vantage, the energies of an ecology are resources that allow for the thriving of life. By extension,

these energies become targets of extraction. And logics of energetic and material extraction are geographically, geopolitically, and historically situated. While much of the discussion of Downey's interest in electromagnetism here frames it as a cosmic force, this should not be taken as a presupposition that it is above or outside of planetary struggles for the management, control, and organization of energy as resource. A central feature of the dissertation's main claim is that Downey's aesthetics of energy explores how energy is implicated as a resource in the struggles of modernity, coloniality, de-coloniality, and Cold War geopolitics. This is what I will be turning to in the next chapter.

It has been noted earlier in the dissertation that most scholars of Downey recognize a shift between his cybernetic utopian experiments of the late-1960s and early-1970s, and the more sociopolitical commentaries he takes up in the mid-1970s centered around the problematics of subjectivity, ethnographic anthropology, and the West's imperialist and colonialist relation to his native Latin America. Some of his most well-known works to emerge from this time are his *Amazon Tapes* (1977-1979): a series of single channel videos aimed at dismantling claims to objective knowledge of the "Other" and taped during Downey's stay with the Yanomami of the Amazon River Basin in Venezuela. In these tapes, narratively fragmented images of tribe members oscillate with close-ups of their lived surround—both working together to destabilize any coherent image of who they might be when seen through the very documentary ethos Downey deploys and critiques. The following chapter will take up these works, and will accept that they are indeed related to issues of subjectivity, its impossible representation, and a commitment to a critical unknowability. However, the following chapter will introduce a new angle to this interpretation. With the help of decolonial scholars like Macarena Gómez-Barris and Walter D. Mignolo, I will explore how Downey recognized that any critique of coloniality

must be attendant to those extractive regimes that not only oppressed Indigenous lives, but their lived surround and the energies that enliven it. It is within this context that his aesthetics of energy realizes most fully the idea of energy as resource—something implicated in those historical struggles of modernity, coloniality, decoloniality, and Cold War geopolitics.

At issue in Downey's turn towards energy as resource is an expansion of what forms of energy are legible within his aesthetics of energy, and what issues it can attend to. The following chapter will narrate the gradual opening of this aesthetics in relation to not only the historical development of ecosystem ecology, but also the spiritual energies of the Amazon as revealed to him by the Yanomami, and the extractive forces that threaten them. It is in this context that Downey's aesthetics of energy undergoes a major transformation, and the following chapter will endeavor to articulate how and towards what ends.

## Chapter 4 – The Forest’s Own Energy Flow

### Introduction

This chapter explores a new iteration of Juan Downey’s aesthetics of energy: energy as resource. More specifically, this chapter argues that Downey’s concept of energy as resource culminates in a demonstration of solidarity with Amazonian Indigeneity and a substantial critique of the logics of extraction. Articulating how Downey arrives at this understanding of energy as resource will be the primary concern of this chapter. I will detail an encounter between Downey’s interest in how energies sustain and enable the life of environments and the Indigenous ecological worldview of the Yanomami (whom he spent seven months with in the Orinoco River Valley between 1976 and 1977). The result of this encounter is, I claim, a cosmologically-informed, decolonial understanding of energy as resource that finds its clearest articulations in his *Video Trans Americas* (1973-76) and Amazon tapes (1976-79). At issue here is an expanding of the scope of what is legible within Downey’s aesthetics of energy—from the solar, metabolic, and mineral energetic resources of ecosystems to the spiritual energies of the Amazon as revealed to him by the Yanomami. And as that scope expands, the consequences of the industrialized, extractive relation to the Amazon becomes, for Downey, ever clearer and in need of critique. It is in this way that energy as resource culminates in a demonstration of solidarity with Amazonian Indigeneity and a critique of extractive logics.

The concept of energy as resource is a shift of concern within Downey’s aesthetics of energy towards what I am calling the “down-to-earth” uses of energy by living things and collective entities like ecosystems, communities, states, and corporations. Which is to say, it is different in tone from the more speculative and philosophical engagement with electromagnetism as ecological media unfolded in the previous chapter. This chapter attends to a central feature of

the main claim of this dissertation, that Downey's art can be understood as aesthetics of energy: a concerted, multi-media attempt to understand how energies might play a transformative role in the making of art; how they can be channeled in the formation of objects, environments, and identities; and how, and towards what ends, they have been positioned as a resource in the developments of modernity, de/coloniality, and the geopolitics of the Cold War. Understanding energy as resource will aid us in thinking through more practically how Downey conceived the relation between energies, environment, identity, and the developments above. While this chapter is concerned with articulating the evolution of this concept—how it changes over time—it is helpful to begin by being clear about where it starts.

In the early-1970s, I claim Downey's energy as resource engages two related issues. The first: how different forms of energy, like solar or metabolic, sustain and enable life within environments. For example, the sun's rays are energetic resources for the plants that need them to grow, and those plants become energetic resources for the other lifeforms that consume them. This is an ecosystemic understanding of energy's relation to an environment and its inhabitants, where the transformations of energy allow life to flourish. The second related issue of energy as resource concerns primarily what I am calling *energetically-rich* materials. These are things like fossil fuels or minerals that have latent energy within them and are extracted from the planet at large scales most often by corporations. In this sense, I claim Downey is thinking about, for example, the effects of the exploitation of his native Chile's mineral resources by American mining interests. More generally, this element of energy as resource concerns how different forms of energy are transformed into valuable commodities and implicated within historically-situated, economic and national struggles. What is also invoked in this second issue, and brings it into relation with the first, are the environmental consequences of extracting energetically-rich



materials from the planet. Here, I suggest Downey turns his attention to how the human quest for energetically-rich materials often necessitates the anthropogenic disturbance of an environment and who and what suffers as a result.

What this chapter will make clear is how Downey's initial understanding of energy as resource evolves during the 1970s, and I claim evidence of that evolution can be found in his two most well-known video projects, *Video Trans Americas* (VTA) and his Amazon tapes—the latter being a series of videos shot while spending nearly a year amongst the Yanomami. More specifically, as Downey lived amongst the Yanomami, he became aware of the Amazon as not just an ecosystem or material space of energetic resources, but also a space of spiritual energies integral to Yanomami life and the Amazonian ecology itself. In turn, his understanding of what can be thought as an energetic resource expands in line with this Indigenous ecological worldview. Simultaneously, the destruction of the Amazon by extractive forces—those seeking to plunder the Amazon of its energetically-rich materials at the expense of Indigenous communities—is made clearer to Downey, catalyzing its critique.

I will articulate this evolution of energy as resource by attending to these video's images of the Latin American environment and how their subjects interact with it, alongside an exploration of the energetic themes of Yanomami cosmology. Some key questions here are: How does Downey visualize the energetic resources and relations of the Latin American environment? How do the energetic themes of Yanomami cosmology perceptibly inform Downey's videos? And how does Downey frame the stakes of the extractive relation to the Amazon? Answering these questions is an attempt to make VTA and the Amazon tapes newly legible within Downey's aesthetics of energy, and departs from the cultural and symbolic analyses that have thus far dominated the literature on this body of work.

This chapter unfolds its main claim in three related sections. The first section, “Approaching Energy as Resource,” offers prefigurations of Downey’s turn towards energy as resource during the early-1970s. It looks to sculptures and installations preceding VTA and the Amazon tapes that, I argue, demonstrate a nascent thinking through of how different forms of energy might understood as resources. That is, how they sustain and enable the life of environments and become transformed into commodities struggled over by nations and corporations. Key to this section is the outlining of a contemporaneous transformation in the discipline of ecology—the introduction of the biosphere concept and ecosystem ecology—where environments themselves were thought in energetic terms whose fragility was subject to anthropogenic disturbances.

Once these prefigurations of energy as resource are articulated, the following two sections aim to describe how this concept evolves over the course of VTA and the Amazon tapes, and towards what ends. The first of these sections, “The Forest’s Own Energy Flow,” is split into two parts. The first part takes time to introduce these videos and elaborate the contemporary analyses of them by art historians and anthropologists. The objective here is to clearly outline the existing critical appraisals of VTA and the Amazon tapes to better throw into relief the differences and intended contribution of this chapter’s argument. Understanding that these videos have been read through a cultural and symbolic lens—which focuses on Downey himself, his critique of ethnographic anthropology, and issues of subjectivity—serves to foreground what is gained by shifting emphasis towards these video’s depictions environment, energy, and Indigeneity. Rather than see the Latin American environment as just the scenic backdrop of cultural activity, this part suggests there is more significance to Downey’s images of streams, mountains, and flora, especially in relation to his videos’ subjects.

The second part of this section articulates how energy as resource is visualized in certain VTA and Amazon tapes, as well as how the scope of what can be thought within the context of energy as resource is expanded in line with the ecological worldview of the Yanomami. This will be achieved through a detailed formal analysis of these videos that asks: What about Downey's depictions of the Latin American environment, and his subjects' interactions with it, bear traces of his concern with energy as resource? How do these images give form to, and demonstrate the pushing further of, what can be thought as an energetic resource? Critical to this part is an exploration of the energetic tropes and ecological relationality of Yanomami practices and cosmology—informed by the writing of Yanomami shaman Davi Kopenawa. Here I try and tease out the correspondences between how Downey visualizes the energetic relations of the Amazon through video, and how the Yanomami live those relations as a cosmological reality. It is in this part that we learn the ways in which Downey comes to understand the forest as both a material and spiritual ecology of energies. It is in the context of this where we also learn of the threat posed by those extractive logics that seek to reduce the forest only to what energetically-rich materials can be forcefully taken from it at the expense of the Yanomami. This sets the reader up for the final section.

The final section, "Friendship for the Forest," tries to further clarify the consequences of Downey's opening up of the concept of energy as resource. Here I focus on the claim that in doing so, Downey situates energy as resource as both a critique of the logics of extraction, and a demonstration of solidarity with Amazonian Indigeneity. What is at issue here is a trajectory wherein as Downey expanded the scope of energy as resource through his contact with an Amazonian ecological worldview, the harm of extractive logics became ever clearer and in need of critique. In this section I turn to decolonial and Indigenous scholars to clarify Downey's

extractivist critique and situate his expanded conception of energy as resource in relation to Indigenous ontologies of land. In using “land” instead of “environment” in this final section, I am gesturing to a more holistic understanding of lived space that attends to the relations between humans and more-than-humans outside the bounds of a colonial framework that treats the environment as a passive container of raw materials. This section aims to make clear how the more Downey grew to understand the Amazon rainforest as a teeming ecology of material and spiritual energies, the more he understood the stakes of humans’ extractive efforts in their quest for energetically-rich materials. Here, Downey helps us answer an important question: Which kinds of energetic resource do wish to cultivate and at what cost?

### Approaching Energy as Resource

In order to fully grasp the evolution of Downey’s energy as resource—how it changes over time and towards what ends—the reader must first understand how the concept originates, what themes it was initially dealing with, and what artworks can be identified as embodying it. This section will provide the necessary context to grasp what energy as resource is, what are some critical prefigurations of this idea within Downey’s practice outside of video, and what historical and discursive forces might have contributed to Downey’s articulation of it. To that end, I point out how Downey arrives at this idea during a time where the discipline of ecology was thinking of environments in energetic terms that help ground energy as resource as a critical concept.

Before going any further, I want to provide a brief clarification about what exactly is meant by the term “resource.” Its first two dictionary entries are as follows: 1) “a stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organization in order to function effectively;” and 2) “a country's collective means of supporting itself or

becoming wealthier, as represented by its reserves of minerals, land, and other natural assets.”<sup>1</sup>

In claiming that Downey begins to think of energy as resource, I am suggesting he becomes ever more attuned to the ways in which different energy forms become integral to the “effective functioning” of living beings at different scales, from communities to entire ecologies. This is what I mean when I say one aspect of energy as resource concerns Downey’s interest in how different forms of energy sustain and enable the life of environments. The other aspect attends to his focus on larger, geopolitical histories where material forms of energy are at stake, with a special insistence on the relations between the resource-rich environs of Latin America and Cold War, imperialist and neocolonialist maneuvers by the United States.

Last chapter it was shown how Downey figured electromagnetism as a media for ecological interaction, as a kind of connective, often unseen, force that allowed the agents of a given ecology to interface with one another; while this is a critical theme, it cannot be uncritically collapsed within thinking energy as resource in the sense above. There are important differences this section seeks to make clear. Energy as resource at this early stage is somewhat—though not entirely—less concerned with electromagnetism as its own entity and more with the different forms energy can take as it is being mediated through an ecology via metabolic processes at the organismic level, and, on a sociohistorical scale, the ways in which energy or energetically-rich materials are sought after, extracted, and controlled by states or corporations.

That said, I claim energy as resource can be thought of grounding Downey’s concern with electromagnetism to some extent—and no doubt takes the reader further away from the shadowy and heady space of *Plato Now* discussed in chapter three. It is true that electromagnetic interactions are at the core of nearly all material uses of energy, and the force still retains for

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<sup>1</sup> *Oxford English Dictionary*, s.v. “resource,” accessed May 21, 2020, <https://www.lexico.com/en/definition/resource>.

Downey the position of a “radiant nature” linking disparate forms of life and technics together. And to be clear, electromagnetism is not evacuated from Downey’s work of this period and will still play an important part: both as an energetic force that animates life, and especially in its medium-specific relation to video.<sup>2</sup> But, as energy as resource becomes sharpened into a critically useful concept, we will see electromagnetism’s cosmic pervasiveness be somewhat rerouted into more “down-to-earth” concerns. These concerns pertain to how energy more broadly understood makes environments ecologically livable and targets for extraction and capital *because* of its coveted status as a resource—a useful thing that, when viewed instrumentally, must be hoarded or strictly controlled.

An illuminating point of entry into this discussion is Downey’s since destroyed, at-home installation *Clean New Race* from 1970. It is perhaps one of his earliest works that could be understood as thinking through the idea of energy as resource. In it, Downey effectively turned his Manhattan loft, shared with his wife and stepdaughter, into a small farm. A Super-8 film documenting the work existed at one point but has since been destroyed as well. Thankfully, there exist a photograph of the installation [fig. 1], and—as with many of Downey’s installations—a detailed drawing done in his signature, diagrammatic and text-heavy style [fig. 2]. From that drawing we know Downey aimed to plant “beans, corn, potatoes, tomatoes, etc.” in “wooden plant boxes” that would “provide clean food and oxygen to animals and family. Poultry, goats and fish provide clean meat, eggs, and milk for the family.”<sup>3</sup> Supposedly, within the confines of this work—coincident with Downey’s own home—him and his family would

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<sup>2</sup> Electromagnetism is the constitutive force of the video medium. It operates on an always live flow of electromagnetic signals to produce audio-visual phenomena. For more on a media-technical exploration of video, see: Marcus Weise and Diana Weyand, *How Video Works* (Oxfordshire: Taylor & Francis, 2007); and Yvonne Speilmann, *Video: The Reflexive Medium* (Cambridge: MIT Press, 2008).

<sup>3</sup> Text taken from fig. 2.

share their space with both plant and animal life in the production of “clean” resources. The idea was to create a self-sustaining, interdependent system that harnessed the interactions between plants, animals, and humans in the service of optimal living conditions.

A key point revealed by the drawing is that Downey mapped the location of the planters according to the apartment’s natural light, and designated what additional artificial light they would receive. Of course, every gardener or farmer knows plants need lots of light. But, in pointing out Downey’s attention to this, I want to foreground how his belief in electromagnetism as the medium of ecological interaction is here somewhat more concrete than in the previous chapter. Towards the bottom edge of the drawing, Downey depicts a seed’s stages of growth into a sprout in successively large phases that form a diagonal vector [fig. 2a]. In the first phase, the seed is ever so faintly outlined in green, blue, and red. In the next phase, slightly more color is added as the seed begins to unfold. When the seed’s roots begin to take hold and it pushes upward in the next few phases, the vibrancy and amount of coloring increases intensely. I suggest this is Downey giving visual form to the gradual transformation of initially electromagnetic energy within the plant as it grows—becoming an integral, oxygenating, element of *Clean New Race*’s at-home ecology.

Here, electromagnetic energy is literally grounded in and mediated through the life cycle of the plant. In that way, there is an opening onto other aspects of what energy could be, and this is crucial for understanding Downey’s growing interest in energy as resource. In this installation conceived as a life cycle, the plants provide food for the humans and the nonhuman animals of the installation, as do all the nonhumans for the humans. Thus, the metabolic and caloric energies of living things are implicated in this work alongside electromagnetic radiation.

Art historian and independent curator Julieta González counts *Clean New Race* amongst several of Downey's installations that can be read as explorations of life cycles, and sees them as indicative of the artist's interest in ecology.<sup>4</sup> The ecological through-line of these works, she writes, "is the life cycle structure, where nature, man and technology enter a symbiotic relation of positive interdependence and exchange."<sup>5</sup> This is a reading of ecology indebted to the work of Gregory Bateson—whose influence on Downey was discussed in the previous chapter. I mention González's invocation of Bateson in relation to *Clean New Race* because I do believe it describes well the installation at an immediate level. She argues "Bateson's systemic ecology" informs this work, noting how the combination of different natural and artificial light sources "could enable plants to grow inside the domestic space, providing oxygen, and food for animals (fish, poultry, goats, dogs) and the apartment dwellers, in this case Downey and his family."<sup>6</sup> This renders the installation as a closed but interacting ecology of different systems whose functioning strives towards the cybernetic themes of homeostatic optima and balance.

However, it is this notion of cybernetic closure that I would like to interrogate since I believe Downey's shift towards energy as resource anticipates scales that are irreducible to the immediate space of the *Clean New Race* installation and the relative closure of Batesonian systems. Part of my argument concerning energy as resource is that, while it does deal with the ecological relations described by González, it also goes beyond them towards things like the planetary ecology and the sociohistorical struggles of modernity.

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<sup>4</sup> "Life Cycles" was the title of a group of works exhibited at a retrospective of Downey's organized by González and held by the Museo Tamayo in Mexico City, from March 21-September 1, 2013. It was titled *Juan Downey: Una utopía de la comunicación* (Juan Downey: A Communication's Utopia). Another work included under the heading of "Life Cycle" was *A Vegetal System of Communication for New York State* (1972). These works all shared similar concerns about the relations between living things, their environment, and the mediating role of technology.

<sup>5</sup> Julieta González, "Juan Downey's Communications Utopia," in *Juan Downey: 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 477.

<sup>6</sup> Ibid. 478.



In order to ground this claim, I suggest we look at the fertilizer Downey chose to grow the plants of *Clean New Race*. It is a natural fertilizer, the specific name of which is actually the title of an unexhibited work of Downey's: *Chilean Nitrate of Soda Potash* (1970) [fig. 3]. This installation, a lush flowerbed occupying the balcony of Downey's apartment, made use of the titular product. Chilean nitrate fertilizer is a naturally occurring fertilizer whose main ingredient is indigenous to the Atacama Desert of northern Chile, and was the world's first mass produced natural fertilizer until the advent of synthetic fertilizers in the early twentieth-century.<sup>7</sup> I claim that in using this product, Downey identifies a nexus where environmental and historical concerns are made to orbit one another, allowing the idea of energy as resource to open onto scales inclusive of yet also beyond a given ecology and its electromagnetic, metabolic, and caloric energy relations.

To explore this point further, take 1970's *Make Chile Rich* [fig. 4]—a multimedia work that pairs readymade sculpture with drawing and photography. On the readymade side, it is a literal canvas sack of the natural Chilean fertilizer on a pedestal; it slightly slouched but its logo, manufacturer, and the description of its contents are readable. The drawing, placed besides the sack, contains the following text:

Most of the food we eat is partly the result of artificial fertilizers. These have proven to be, in the long, run harmful to: animals, mankind, plants, soil; and even fatal to some species. The nitrate from Chile is a top quality natural fertilizer widely and worldly used until the beginning of the century when it was substituted by artificial fertilizers.

Below this text are two small, black and white pictures. The first: a decrepit, puny little plant with withered leaves alongside text that reads: "fertilized with amonia [sic] nitrogen" (an

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<sup>7</sup> The process of creating synthetic fertilizer was first devised in 1909 by German chemist Fritz Haber. His technique was scaled up to a mass-produced level with the help of industrialist Carl Bosch. Today, the process is referred to as the Haber-Bosch technique of ammonia synthesis. For a thorough history on this see, Vaclav Smil, *Enriching the Earth: Fritz Haber, Carl Bosch, and the Transformation of World Food Production* (Cambridge: MIT Press, 2001).

artificial fertilizer). The second: a plant with full, healthy-looking leaves and text that reads: “fertilized with Chilean nitrate of soda potash.” I suggest natural fertilizer can be thought of as an *energetically-rich* material created through the depositing and cycling of minerals within soil. It helps in the efficient growth of plants by supplying them nutrients. I call natural fertilizer an energetically-rich material because within it a kind of latent energy resides waiting to be activated by a growing plant—like the one Downey so carefully depicted in the drawing of *Clean New Race* and those he filled his balcony planter with. By delving into the historicity of Chilean nitrate fertilizer one can begin to grasp the various connotations of energy as resource and the different scales it attends to.

Chilean nitrate fertilizer is geographically specific, geopolitically contested, and environmentally consequential. At the geographic level, the mineral deposits that make the fertilizer so potent are only found in the Atacama Desert of northern Chile.<sup>8</sup> American geologist George E. Ericksen—an expert on the minerology of the Atacama—describes it this way: “The nitrate deposits in the extremely arid Atacama Desert of northern Chile are among the most unusual of all mineral deposits. In fact, they are so extraordinary that, were it not for their existence, geologists could easily conclude that such deposits could not form in nature.”<sup>9</sup> Which is to say, the mineralogical specificity of the region from where the fertilizer originates is not

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<sup>8</sup> The Atacama Desert contains a wealth of natural resources that have singled it out for exploitation and investment. It contains large amounts of lithium, which are used in the making of batteries for electronics. It’s extremely dry atmosphere, paired with its remoteness, also creates favorable conditions for astronomical activity. The Atacama is home to multiple observatories, the most famous being the Atacama Large Millimeter Array. Media studies scholar Orit Halpern has written on the links between mineral extraction, electronic technologies, and astronomical observation—using the Atacama—as a case study in: Orit Halpern, “Learning from the Atacama,” *Logistical Worlds: Infrastructure, Software, Labour*, accessed May 5, 2021, <http://logisticalworlds.org/blog/learning-from-the-atacama>.

<sup>9</sup> In the article, Ericksen goes on to articulate “the features of the deposits that appear to defy rational explanation” and how “no chemical processes acting at temperatures and pressures found at the earth’s surface is known to produce” a particular compound within the deposits. George E. Ericksen, “The Chilean Nitrate Deposits: The origin of Chilean nitrate deposits, which contain a unique group of saline minerals, has provoked lively discussion for more than 100 years,” *American Scientist* 71, no. 4 (July-August 1983): 366.

only singular on the planet, but in that singularity becomes almost scientifically inexplicable. Unsurprisingly—if one keeps in mind the connotation of resource being “a country's collective means of supporting itself or becoming wealthier, as represented by its reserves of minerals, land, and other natural assets”—these energetically-rich nitrate deposits, given how unique they are, have played a major role in Chilean national and economic history.<sup>10</sup>

It was in the 1830s, prompted by growth in colonial agriculture, that global demand for nitrate fertilizer exploded.<sup>11</sup> At this time, many of Atacama's relevant mineral deposits were still under Peruvian control, but this changed during the War of the Pacific (1879-83), fought between Peru and Bolivia against Chile. In the war's aftermath, a victorious Chile was left the sole inheritor of the world's largest nitrate deposits, and entered into the emerging global economy through its own imperialist maneuvers and extractive regimes within the Latin American continent.<sup>12</sup> This privileged economic position was radically disrupted during the early-twentieth century once the production of synthetic nitrates was made widely-available and World War I got underway. That is because nitrates have both military and agricultural uses. The United States then became one of the world's largest synthetic nitrate producers through a dual program that, in wartime put the nitrates to military use, and in peacetime put them to

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<sup>10</sup> For an overview of this history, see: Donald McConnell, “The Chilean Nitrate Industry,” *Journal of Political Economy* 43, no. 4 (August 1935): 506-29.

<sup>11</sup> H. R. Whitbeck, “Chilean Nitrate and the Nitrogen Revolution,” *Economic Geography* 7, no. 3 (July 1931): 273.

<sup>12</sup> Between roughly 1880 and 1919, Chile controlled a “virtual monopoly” on the nitrate trade, and these years were described as Chile's “Nitrate Age;” both private producers and the Chilean government—who, in experimenting with partial nationalization, exacted heavy export taxes on nitrates—became incredibly wealthy during this time. Many of the costs associated with the demanding extractive work were mitigated through exploitative labor practices and debt peonage that took advantage of the country's poor and over 100,000 Chinese migrant laborers. For more on Chile's imperialist history, see: J. R. Brown, “The Frustration of Chile's Nitrate Imperialism,” *Pacific Historical Review* 32, no. 4 (November 1963): 383-96; for more on the effects the nitrate age had on the Chilean government, see: J. R. Brown, “Nitrate Crises, Combinations, and the Chilean Government in the Nitrate Age,” *The Hispanic American Historical Review* 43, no. 2 (May 1963): 230; and for exploitative labor practices of the early Chilean nitrate trade, see: Edward D. Melillo, “The First Green Revolution: Debt Peonage and the Making of the Nitrogen Fertilizer Trade, 1840—1930,” *The American Historical Review* 117, no. 4 (October 2012): 1028-60.

agricultural use.<sup>13</sup> This left one of Chile's primary exports in little demand with devastating economic consequences.

What this contextual information tells us is that the simple bag of Chilean fertilizer in *Make Chile Rich* opens onto a deep history. While Downey may not have been aware of that entire history, it is clear the agricultural product held a special place for him by virtue of its national specificity. Moreover, it is also clear that *Make Chile Rich* pairs a national sentiment with an environmental concern. After all, synthetic fertilizers, beyond the harm they create to the Chilean economy, are also harmful to "animals, mankind, plants, [and] soil," as the text of the work indicates.<sup>14</sup> I claim it is this oscillation of national and environmental issues that the idea of energy as resource allows for. However, there is more to the story of nitrate fertilizers that will clue the reader into the kinds of planetary scales this new iteration of Downey's aesthetics of energy opens onto.

In *Make Chile Rich*, when Downey shows us those two images, one of a struggling and withered plant, and another of a lush, thriving one, he is demonstrating which plant has better fertilizer-supplied nitrogen content.<sup>15</sup> The idea being, the natural nitrate fertilizer that had largely defined Chile's economic history and well-being is better for both the plant, and by extension, the environment of which it is a part. Crucially, that more local environment is component to the planetary biosphere. The human production of nitrate fertilizers, either natural and extractive or synthetic and manufactured, has sweeping ecological consequences in excess of the national

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<sup>13</sup> For more on this history, see: Timothy Johnson, "Nitrogen Nation: The Legacy of World War I and the Politics of Chemical Agriculture in the United States, 1916-1933," *Agricultural History* 90, no. 2 (Spring 2016): 209-29.

<sup>14</sup> From the textual component of *Make Chile Rich*.

<sup>15</sup> "Nitrogen's abundance in plants cannot be missed: it is the nutrient responsible for the vigorous vegetative growth, for the deep green of the leaves, for their large size and delayed senescence, as well as for the size and protein content of cereal grains, the staples of mankind. Nitrogen deficiency cannot be missed either: pale green or yellowing leaves, slow and stunted plant growth, low yields and depressed protein content of seeds." Smil, *Enriching the Earth*, xiv.

boundaries implicated by their trade. Starting with Chile's intense extractive efforts in the Atacama during the nineteenth century, and then supercharged by the advent of synthetic fertilizer production in the early twentieth, humanity has continued in massively reconfiguring the planet's nitrogen cycle.

The nitrogen cycle is the naturally occurring mediation of nitrogen through the Earth's different atmospheric and terrestrial zones. Even though the atmosphere is made up of 78% nitrogen, in its gaseous form it is incredibly difficult for organisms to process. Nitrogen needs to be "fixed"—that is, fused with other elements in the creation of nitrate compounds—in order to be efficiently used by plants and animals.<sup>16</sup> Certain bacteria, which have evolved symbiotic relationships with plants, are able to fix nitrogen and transform it into a bioavailable compound their symbionts can efficiently process. This symbiotic exchange has happened uninterrupted since there was nitrogen in the atmosphere, bacteria in the soil, and plants on the planet's surface. Additionally, nitrate fertilizers were used in early agricultural societies through the composting of human and animal excreta (which contained digested plant material that contained fixed nitrogen), or the planting and plowing of certain kinds of ferns that are especially amenable to nitrogen-fixing bacteria.

These methods, because of their smaller scales, were hardly disruptive of the planetary nitrogen cycle. This, however, changed with the advent of extracted nitrate compounds and then the production of synthetic nitrates. In 1970, the same year Downey created *Make Chile Rich*, American biochemist C. C. Delwiche wrote in *Scientific American*: "Of all man's recent interventions in the cycles of nature the industrial fixation of nitrogen far exceeds all the others

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<sup>16</sup> Sometimes this fixation occurs, minimally so, through lightning or solar and cosmic radiation where energies are high enough to bring nitrogen together with the hydrogen of water, for example. Most often, however, it is done by aquatic microorganisms, like algae, and terrestrial microorganisms that live in symbiotic relation with particular kinds of plant life, such as legumes and ferns.

in magnitude.”<sup>17</sup> These interventions can, in the words of Canadian geographer and scholar of energy Vaclav Smil, generate challenges that range “from local health to global changes and, quite literally, extend from deep underground to high in the stratosphere.”<sup>18</sup> That is all to say, the anthropogenic extraction and production of nitrate compounds reconfigures nitrogen-sensitive planetary systems in radically disruptive ways.<sup>19</sup>

I mention the planetary effects of nitrates because they clue us into the Earth-system scales that are implicated when energy is thought as a resource. Moreover, the idea of thinking the planet as composed of such large-scale systems has historical precedent contemporaneous with Downey’s forays into energy as resource. While we know Downey was clearly indebted to what González calls “Bateson’s systemic ecology,” Bateson’s own ideas formed within an intellectual context, the 1960s, where the planet itself—understood in “biospheric” terms—was definitive of the era’s study of ecology.

For the remainder of this section, I want to briefly elaborate the concept of the biosphere and the attendant development of ecosystem ecology because it renders planetary systems as basally energetic and relational in nature, and is thus conceptually entwined with the notion of energy as resource. To be clear, Bateson’s approach to the planetary ecology was communicative and pattern-driven, and thus less obviously concerned with the material transformations of

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<sup>17</sup> C. C. Delwiche, “The Nitrogen Cycle,” *Scientific American* 223, no. 3 (September 1970): 136.

<sup>18</sup> Artificially high amounts of nitrates in soil can be destructive for certain species of plants and symbiotic microorganisms adapted to more efficient use of the compound; those high concentrations of nitrates that seep into the ground through crop fertilization make their way towards rivers and eventually oceans, creating massive algal blooms that literally suffocate ocean life; nitrates can then evaporate and become the compound nitrous oxide, a single molecule of which absorbs around two-hundred times more radiation than the greenhouse gas carbon dioxide. Vaclav Smil, “Global Population and the Nitrogen Cycle,” *Scientific American* 277, no. 1 (July 1997): 79. Atmospheric chemist Paul Crutzen, who is famous for introducing the concept of the Anthropocene, has also written on effects of nitrate fertilizers in relation to planetary systems. See: Paul Crutzen and Dieter H. Ehhalt, “Effects of Nitrogen Fertilizers and Combustion on the Stratospheric Ozone Layer,” *Ambio* 6, no. 2/3: Nitrogen: A Special Issue (1977): 112-17.

<sup>19</sup> For an overview on the effects of nitrate fertilizers on the nitrogen cycle, see: Peter M., Vitousek, et al., “Technical Report: Human Alteration of the Global Nitrogen Cycle: Sources and Consequences,” *Ecological Applications* 7, no. 3 (August 1997): 737-50.

energy.<sup>20</sup> However, he understood the ecology of mind to still be situated amongst and responsive to biospheric processes, even if his emphasis was ultimately more informational.<sup>21</sup>

The term “biosphere” as it is frequently used today and during Downey’s time was conceived by Russian “biogeochemist” Valdimir I. Vernadsky in a series of lectures delivered during the 1920s.<sup>22</sup> The term biosphere describes the terrestrial envelope of the planet where life can naturally occur and has since seen wide adoption within the Earth sciences. As Vernadsky puts it: “Living matter exists only in the *biosphere*. This includes the whole atmospheric troposphere, the oceans, and a thin layer in the continental regions, extending three kilometers down.”<sup>23</sup> It is within these zones that biological, geological, and chemical processes cyclically and reciprocally occur in the generation of “living matter,” which includes all living beings from the animal to vegetal and the micro- to macroscopic. This is why Vernadsky referred to himself as a “biogeochemist,” a portmanteau of someone who studies biology, geology, and chemistry. A major insight of the biosphere concept is that these seemingly distinct phenomena—the biological, geological, and chemical—can be taken together in the working of an interacting system that is the planet’s livable surface.

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<sup>20</sup> For more on Bateson’s thinking in relation to the ecological and intellectual context of the 1970s, see: Peter Harries-Jones, *A Recursive Vision: Ecological Understanding and Gregory Bateson* (Toronto: University of Toronto Press, 1995).

<sup>21</sup> “What is my answer to the question of the nature of knowing? I surrender to the belief that my knowing is a small part of a wider integrated knowing that knits the entire biosphere or creation.” In this brief quotation, we can see that Bateson figures knowing and mind in relation to the biosphere, but ultimately his emphasis on epistemological issues makes his theories more about communication and information than energy; or, rather, energetic relations for Bateson are subsumed by issues of communication. This is why his ideas were so readily consumed by artists interested in cybernetics. Gregory Bateson, *Mind and Nature: A Necessary Unity* (Cresskill: Hampton Press, 2002), 100.

<sup>22</sup> G. Evelyn Hutchinson, “The Biosphere,” *Scientific American* 233, no. 3 (September 1979): 45. Vernadsky’s *The Biosphere*—an elaboration of the concepts he introduced in the two lectures mentioned above—was translated into English in 1988 and is quoted below. As a technical point, it should be noted that Austrian geologist Eduard Suess first coined the term “biosphere” in the late-nineteenth century, but it was Vernadsky who most fully articulated its contemporary meaning.

<sup>23</sup> Valdimir I. Vernadsky, “The Biosphere and the Noösphere,” *American Scientist* 33, no. 1 (January 1945): 1. Originally written December 15, 1943, Moscow.

What is especially important about the biosphere concept is its generative relation to the same kinds of cosmic energies we know Downey was interested in. According to Vernadsky, “[t]he biosphere is at least as much a *creation of the sun* as a result of terrestrial processes.”<sup>24</sup> By this he means, our biosphere’s condition of possibility is the electromagnetic emissions it receives from space. He elaborates this idea in the following way:

A new character is imparted to the planet by this powerful cosmic force. The radiations that pour upon the Earth cause the biosphere to take on properties unknown to lifeless planetary surfaces and thus transforms the face of the Earth. Activated by radiation, the matter of the biosphere collects and redistributes solar energy, and converts it ultimately into free energy capable of doing work on Earth.

The outer layer of the Earth must, therefore, not be considered as a region of matter alone, but also as *a region of energy and a source of transformation of the planet*.<sup>25</sup>

Thus, the biosphere can be thought of as a kind of transducer of radiant energy that allows for life on the planet. I make a point to elaborate on the energetic origins of the biosphere concept, not only because the reader could imagine Downey being uniquely interested in them, but also because it gives a sense of how radiant energy is effectively the first stop in the infinitely complex web of ecological relationality that structures biospheric activity. Radiant energy becomes the primary *resource* sustaining and enabling the life of environments.

Ecosystem ecology emerged during the 1960s as what amounts to a discretization of the biosphere into distinct terrestrial and aquatic zones. These zones, like the biosphere of which they are integral parts, are understood in terms of complex systems of matter and energy flows. The Odum brothers, Eugene P. and Howard T., were at the forefront of ecosystem ecology and it became a major site of academic investigation that—like Bateson’s approach—evinced traces of

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<sup>24</sup> Valdimir I. Vernadsky, *The Biosphere*, trans. David B. Langmuir (New York: Copernicus, 1998), 44.

<sup>25</sup> Ibid. Emphasis added.



the systems rhetoric of cybernetics, but was more materially and energetically inclined.<sup>26</sup>

Howard T. Odum explains what an ecosystem is in the following, somewhat poetic way: “A patch of forest is a mysterious thing, growing, repairing, competing, holding itself against dispersion, oscillating in a low entropy state, getting its daily quota of free energy from the sun. It is an ecosystem.”<sup>27</sup> Ecosystem thinking thus attends to the ways in which terrestrial or aquatic domains “grow” or “repair” themselves in accordance with features and lifeforms unique to them. For instance, the way a desert ecosystem mediates its energy is surely different from how a coral reef would do so, while nonetheless being concretely dependent upon external energy flows.<sup>28</sup> Such dependance is shared by all the living things within ecosystems, as ecologist David M. Gates puts it succinctly in a 1968 article: “The environment has significance to an organism through the flow of energy and only through the flow of energy.”<sup>29</sup> One could imagine Downey agreeing with such a sentiment given, say, his care to outline the sources of natural and artificial light in the drawing of *Clean New Race*, where the positioning of the installation’s plants was determined by the apartment’s available energy flow.

What lurks underneath the concrete dependence of the biosphere, its ecosystems, and the lifeforms within them on external energy flows is the fragility of those flows in relation to anthropogenic disturbance. Writing in 1970 about the biosphere concept in an attempt to

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<sup>26</sup> It is important to note that the Odum brothers got their start in ecosystem ecology by working with the US Atomic Energy Commission to study the effects of nuclear fallout on organisms and environments caused by the testing of atomic bombs on Pacific islands. This reveals a much darker side to the study of energy and environments at this time. For more on this history, see: Elizabeth M. DeLoughrey, “The Myth of Isolates: Ecosystem Ecology in the Nuclear Pacific” *Cultural Geographies* 20, no. 2, Special Issue: Islanding Cultural Geographies (April 2013): 167-184. For a more general intellectual history of ecosystem ecology, see: Joel B. Hagen, *An Entangled Bank: The Origins of Ecosystem Ecology* (New Brunswick: Rutgers University Press, 1992).

<sup>27</sup> Howard T. Odum. “Ecological Potential and Analogue Circuits for the Ecosystem.” *American Scientist* 48, no. 1 (March 1960): 1.

<sup>28</sup> “In ecosystems as in many other kinds of open systems, energy is supplied in concentrated form from the outside driving a sequence of branching energy flows, maintaining complex structure, recycling materials, and finally passing out from the system in a dispersed state of high entropy.” *Ibid.*

<sup>29</sup> David M. Gates, “Energy Exchange and Ecology,” *BioScience* 18, no. 2 (February 1968): 90.

generate awareness of Vernadsky's contribution, G. Evelyn Hutchinson—who was a teacher of Howard T. Odum and himself a famous ecologist—cautioned readers about the terrestrial envelope's susceptibility to disruption and humans' role in such disruptions. At one point in his article, he describes “the production of utilizable fossil fuels” as “essentially an accidental imperfection in” the normal operation of the biosphere that “we have come to depend on too confidently.”<sup>30</sup> The extraction of natural nitrates and the production of synthetic ones could effectively be described in the same way, in that they are also anthropogenic, disruptive of planetary systems, and depended upon “too confidently.”

What I have hoped to make clear in outlining the biosphere concept and ecosystem ecology is that there was a historically contemporaneous precedent for thinking energy, life, and ecology as deeply related at planetary scales. I claim this is what Downey begins to approach in his working through of the idea of energy as resource, as well as the sociohistorical implications of humans' interactions with energies and energetically-rich materials. To be clear, I am not suggesting that every geographical, geopolitical, historical, and ecological fact laid out above was anticipated by Downey when he chose to use the Chilean nitrate fertilizer in his practice. And indeed, during the early-1970s, I believe this idea of energy as resource was in a more latent stage, waiting to be fully activated by his experiences during VTA and then during his time in the Amazon.

What I am suggesting, though, is that within that bag of energetically-rich material presented in *Make Chile Rich*, or suffusing the soil of *Clean New Race* and his balcony's

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<sup>30</sup> Hutchinson offers a warning at the end of his article: “As inhabitants of the biosphere, we should regard ourselves as being in our infancy, particularly when we throw destructive temper tantrums. Many people, however, are concluding on the basis of mounting and reasonably objective evidence that the length of life of the biosphere as an inhabitable region for organisms is to be measured in decades rather than hundreds of millions of years. This is entirely the fault of our own species. Hutchinson, “The Biosphere,” 47, 53.

flowerbed, Downey identified a nexus of conflicting scales and interests. He identified a material meeting point where logics of extraction and national histories and economies met up against planetary systems and ecological fragility; an intersection where the rhetoric and reach of energy was literally and figuratively grounded in terrestrial systems that nonetheless bear the traces of cosmic, electromagnetic emissions. In order to fully grasp the evolution of energy as resource over the course of Downey's VTA and Amazon tapes—to which the next section will attend—these prefigurations are required.

### “The Forest's Own Energy Flow”

In the previous section I argued that, prior to VTA and the Amazon tapes, Downey was becoming ever more sensitive to the ways in which different kinds of energies and energetically-rich materials are both integral to the effective functioning of ecologies, and bound up in extractive logics and transnational relations. Now, I turn to these later videos to explore how they give form to and expand this notion of energy as resource.

The guiding claim of this section is that there is visual evidence within Downey's VTA and Amazon tapes that show how his concept of energy as resource was evolving towards a demonstration of solidarity with Amazonian Indigeneity and a critique of extractive logics. I will focus on how Downey visualizes the energies and energetic resources and relations of the Latin American environment to articulate this evolution. I will also read these visualizations—especially those of the Amazon tapes—alongside the energetic tropes of Yanomami cosmology to foreground the connection between the two. At issue here is a trajectory wherein as Downey expands the scope of what can enter into the domain of energy as resource—from ecosystemic,

solar, and metabolic energies to those spiritual energies proper to Yanomami life—energy as resource is transformed.

In order to argue this claim, the reading I am proposing here gives due attention to the way Downey literally frames the entanglement of energy, environment, and ecology within these videos, which is less often accounted for in the relevant literature. That said, after introducing VTA and the Amazon tapes, I will continue this section's first part with an overview of the current scholarly consensus surrounding these videos. This will allow the reader to see how the reading I am proposing both builds upon and extends the insights of those art historians and anthropologists who have engaged with VTA and the Amazon tapes.

VTA was conceived in 1973 as a series of videotaped road trips from New York City to the bottom tip of the South American continent, the first of which was cut short by Augusto Pinochet's US-backed, military coup against the democratically elected Chilean president Salvador Allende. In the announcement for this project, which appeared in the same "Video and Environment" issue of *Radical Software* discussed in the previous chapter, Downey elaborated a wish to bring together the isolated cultures of the American continents through the feedback potentials of video. He writes, "Cultural information (art, architecture, cooking, dance, landscape, language, etc.) will be mainly exchanged by means of video-tape shot along the way and played back in the different villages, for the people to see others and themselves." This would position Downey himself as "a cultural communicant, as an activating aesthetic anthropologist with visual means of expression: video-tape."<sup>31</sup> And VTA more or less embodied these stated aims. The videos making up this project offered images of locations—and their inhabitants—as far away as Texas and Machu Picchu, with various other stops in the Yucatán

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<sup>31</sup> Juan Downey, "Video Trans Americas," *Radical Software* 2, no. 5: Video and Environment (Winter 1973): 4.

Peninsula, Guatemala, Bolivia, and Chile.<sup>32</sup> The feedback potentials of video were utilized to allow viewers both to see themselves and others in the hopes of generating cross-cultural contact amongst the Americas. Interestingly, it was VTA's failure which generated Downey's next project: The Amazon tapes.

Writing in what would later be published as the "Travelogues of Video Trans Americas," Downey writes of VTA's completion. Noting the tapes had been finished, he continues:

Like a chemical catalyst I expected to remain identical after my video exchange had enlightened many American peoples by the cross-references of their cultures. I proved to be no real catalyst, for I was devoured by the effervescence of myths, nature and language structures. Pretentious asshole leveled off!! Only then did I grow creative and in manifold directions. Me, the agent of change, manipulating video to decode my own roots. I was forever deciphered and became the true offspring of my soil, less intellectual and more poetic. An unexpected level had been reached among the strange roads of the heart.<sup>33</sup>

Much to his own surprise, the authorial intent of VTA was never realized, but within that failure Downey discovered something much more promising. Rather than facilitating cross-cultural contact as an "activating aesthetic anthropologist," he became enchanted by "the effervescence of myths, nature, and language structures" of his native continent. While these are no doubt the anthropological objects of study, in Downey's being "devoured by" them the critical distance required for any kind of objective anthropological discourse was dissolved in a profoundly personal, subjective experience. It is this contamination of the supposed objectivity of the anthropological, ethnographic document by subjectivity that scholars have made definitive of the Amazon tapes.

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<sup>32</sup> A full list of the videos included in VTA is: *Rumbo al Golfo* (1973), *Zapoteca* (1973), *Moving* (1974), *New York / Texas 1 & 2* (1974), *Happy '74* (1974), *Central Zone* (1975), *Yucatán* (1973-76), *Guatemala* (1973-76), *Lima / Machu Picchu* (1973-76), *Cuzco 1 & 2* (1974-76), *Inca 1 & 2* (1974-76), *Uros 1 & 2* (1974-76), *Nazca 1 & 2* (1974-76), *La Frontera 1 & 2* (1974-76), and *Inca Split* (1976).

<sup>33</sup> Juan Downey, "Travelogues of Video Trans Americas," In *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 330.

The Amazon tapes were filmed between May 1976 and November 1977 while Downey—alongside his wife Marilys Belt Downey, his stepdaughter Titi Lamadrid, and anthropologist, interpreter, and later collaborator of Downey’s, Jacques Lizot—lived among a Yanomami tribe located in the Orinoco River Valley of southern Venezuela’s Amazon Forest. The Yanomami have been described as one of the most “primitive” tribes of the Amazon, as they have been almost entirely unaffected by modernization and continue to live by customs unchanged for thousands of years. This includes a ceremonial practice of endocannibalism where tribe members cremate their dead and then ingest their ashes in a mixture of banana soup (something Downey was particularly interested in). It was in this context that the Amazon tapes came to be. I will return in more depth to these videos to offer my own reading of them, but now I want to summarize their current scholarly consensus to set the stage for my contribution.

VTA is a chronological and thematic precursor to the Amazon tapes and despite notable differences between the two body of works, they do tackle similar themes. The best way to summarize the critical appraisals of these videos is to describe them as a “countervisuality” aimed at dismantling the way ethnographic anthropology has historically represented Latin American and Indigenous cultures. Countervisuality is term offered by British-American visual culture scholar Nicholas Mirzoeff. He describes it as a “right to look” that “means requiring recognition of the other in order to have a place from which to claim rights and to determine what is right. It is the claim to a subjectivity that has the autonomy to arrange the relations of the visible and the sayable.” Mirzoeff positions countervisuality against visibility—or the power that authorizes what is available to be seen and recognized. He captures this visualizing authority in the image of the “police who say to us, ‘Move on, there’s nothing to see here.’ Only there is, and

we know it and so do they.”<sup>34</sup> It is in this pedestrian image that the invasive effects of visuality can be glimpsed, wherein a power of authority controls what can enter the field of recognizability and toward what ends. Also important for the present purposes is the historical situatedness of visuality. Its first “domains were the slave plantation, monitored by the surveillance of the overseer, operating as the surrogate of the sovereign.”<sup>35</sup> Visuality’s link to the colonial matrix of power is crucial, as Downey’s countervisual critique of ethnographic documentary film similarly takes up colonial relations between the Western Europe, North America, and Latin America as they were propagated through, among other things, the colonial discipline of anthropology. While visuality and countervisuality are about more than vision, Downey’s Amazon tapes (and to some extent VTA) are explicitly concerned with who gets to be seen, how they are seen, and the relations of authority that authorize the seeable.

In Downey’s Amazon tapes the authority is the historical formation of ethnographic documentary film, whose narrative structures and tropes have made Indigenous populations literally available to vision in such a way as turn them into scientific objects of study. Australian anthropologist Michael Taussig takes on precisely this distinction between Downey’s Amazon tapes and the classic ethnographic documentaries they subvert—like Napoleon Chagnon’s *Magical Death* (1971) and *The Ax Fight* (1975)—in his “A Lesson in Looking and Laughter: Juan Downey’s Amazing Yanomami Video, *The Laughing Alligator*” (2011).

Speaking of films like Chagnon’s that similarly engage the Yanomami, Taussig notes: “It is a telltale sign that such movies begin in a masterly manner with a map filling the screen, with a dot or arrow in it to tell you where the people being filmed live: you are thus ‘oriented’ from the

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<sup>34</sup> Nicholas Mirzoeff, *The Right to Look: A Counterhistory of Visuality* (Durham: Duke University Press, 2011), 1.

<sup>35</sup> Ibid. 2.

start and will never get lost. Nor will you know how much of what you see and hear is fake.”<sup>36</sup>

Which is to say, from the very beginning, these ethnographic films operate in such a way as to insulate themselves with an air of objectivity that is critical to the supposedly “scientific” merits of their project. Taussig make a point to emphasize

these films do everything Juan Downey’s videos do not. They are saturated with the performance of ethnographic and scientific authority, from the no-nonsense 1950s-style tell-it-like-it-is resonant male voiceover... to the dependence on long tracking shots in which the Indians are held at arm’s length, like lab specimens.<sup>37</sup>

To that last remark, visual distance is here converted to a kind of critical distance that turns the Indigenous Yanomami into “lab specimens”—something altogether different from the unquestionably human, typically white, European or North American viewing audience. As Taussig sees it, films like Chagnon’s (and, importantly *not* like Downey’s) “ooze authority,” an authority predicated on “the comforting presence of experts on Indians and much else besides, who are like guides taking us on a tour of a museum of petrified exhibits.”<sup>38</sup>

Authority, expertise, and objectivity are exactly what Downey’s tapes critique through a parodic absence. Yet another anthropologist, Francesco Pellizzi, sums this critique up well when he says the artist’s tapes “re-propose again and again, at ever new angles of their disjointed images, not the fantasy (scientific or otherwise) of the ‘portrait’ of a culture, but the very problematic nature or impossibility or such a picture, even the ‘dreaming’ of it.”<sup>39</sup> It is this

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<sup>36</sup> The issue of falsity here is an important one. Taussig mentions that “in 1992, Tim Asch [a Harvard professor and collaborator of Chagnon’s] is reported to have confessed that one of the most memorable moments in *The Ax Fight*, a loud sound said by Chagnon to have been a blow from an ax that knocked a man unconscious, was actually the sound of Asch himself striking a watermelon in the studio.” Michael Taussig, “A Lesson in Looking and Laughter: Juan Downey ‘s Amazing Yanomami Video, *The Laughing Alligator*,” in *Juan Downey: The Invisible Architect*, exh. cat., ed. Valerie Smith (Cambridge and New York: MIT List Visual Arts Center and Bronx Museum of the Arts, 2011), 43.

<sup>37</sup> Ibid. 43-44.

<sup>38</sup> Ibid. 44.

<sup>39</sup> Francesco Pellizzi, “Juan Downey and the Yanomami: Travels through America,” in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 513.



opposition to the authority of anthropology and ethnographic documentary that have contoured the critical appraisals of Downey's videos.

One key to Downey's "dismantling of the objectivity of ethnographic observation" in the Amazon Tapes, as Julieta González frames it, is a kind of turning up the dial of subjectivity.<sup>40</sup> By this I mean, in the place of a disinterested and critically-distanced expert, Downey tenuously locates himself in the humid midst of the Amazonian, quasi-anthropological excursion. Art historian and Downey scholar Carla Macchiavello helps explain this in the following way. She notes that in the Amazon tapes, "[t]he documentary language and format were linked to the artist's personal experience, indicating an inevitable and intimate connection between the ethnographic document, fiction and biography."<sup>41</sup> Macchiavello sees this "intimate connection" especially visible within the Amazon tape *The Laughing Alligator* (1978-79). For her, the video "not only denies the possibility of establishing a continuous narrative" through unconventional imagery and pacing "but it also sheds light on the contamination and influence present in every act of observation and communication."<sup>42</sup>

Julieta González makes a similar point couched in more cybernetic terms in her "Notes on Juan Downey's Program for a Fake Anthropology" (2010). "What was at stake in the feedback experience" of these works, she writes—recalling how Downey hoped to make different cultures see themselves and others through video as VTA's initial impetus—"was a reformulation of subjectivities, a renegotiation of relations of power between observer and observed that was brought about by the relativization of the point of view of the 'ethnographic'

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<sup>40</sup> González, "Introduction," 178.

<sup>41</sup> Carla Macchiavello, "The Space of the Gaze: Vision and Architecture in the Videos of Juan Downey," in *Estrecho Dudosso*, exh. cat., eds., Támara Díaz Bringas and Virginia Pérez-Ratton (San José: TEOR/ética, 2006): 218.

<sup>42</sup> Ibid.

observer, in this case Juan Downey.”<sup>43</sup> It is from within this relativized feedback matrix of subjectivities that Downey was “able to challenge ethnography’s claims to objectivity” and generate “a play of gazes where meaning becomes heterogeneous, subject positions collapse, and both sites of observation, enunciation and spectatorship are compromised.”<sup>44</sup> Thus, González puts a characteristically cybernetic point on the general critical appraisal of these works. It is their destabilization of the visual means of producing objective ethnographic representations and stable, knowable subject/object relations that have attracted both art historians and anthropologists alike.

Finally, I want to recall the colonial historicization of Mirzoeff countervisuality and Taussig’s historicization of ethnographic film to frame an important point made by González in her “Notes” essay. She emphasizes the colonial underpinnings of anthropology in a way, I claim, that has the possibility of opening onto a more thoroughly ecological and decolonial reading of Downey’s VTA and Amazon tapes. As González sees them, these videos are part of a

long lineage of travel accounts in the Americas, from the *Crónicas de Indias* of the 16<sup>th</sup> century to Alexander von Humboldt’s and Aimé Bonpland’s travels to South America at the dawn of the independence movements in the subcontinent between 1799 and 1804, up to Claude Lévi Strauss’ expedition to Brazil in the 1930s... However, while the early chronicles and even Humboldt’s accounts were clearly at the service of colonial interests in the continent and in them landscape acquired the dimension of prospective land to be occupied, cultivated, mined, and exploited, Downey focuses on the native cultures of the continent, subverting the model and turning it into an instrument for the critique of colonial legacies in Latin America, as well as an ode to the indigenous peoples of the Americas.<sup>45</sup>

While the above analyses have made clear that Downey’s videos do focus on the “native cultures of the continent,” González goes on to suggest that is not all they do. If the colonial matrix of

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<sup>43</sup> Julieta González, “Notes on Juan Downey’s Program for a Fake Anthropology,” in *Juan Downey: el ojo pensante*, exh. cat., ed. Marilys Belt de Downey (Santiago: Fundación Telefónica, 2010), 206.

<sup>44</sup> Ibid. 209.

<sup>45</sup> Ibid. 205.

power—within which anthropology has historically operated—viewed the Latin American environment as an extractive zone “devoid of its native peoples, [who are understood as] merely cumbersome obstacles in the way of colonization and exploitation of the natural resources,” then, conversely, González argues, this environment “acquires in Downey’s work a cultural, historical and political dimension.”<sup>46</sup> The idea being, environment acquires these dimensions in Downey’s videos via his celebration of its inhabitants, which is precisely not the aims of the older anthropological texts.

My claim, however, is that the force of Downey’s videos does not solely begin at the cultural level only to make its way down to the environmental. Rather, I want to insist that within his depictions of environment we can detect an ecological sensitivity that similarly resists the power of coloniality. In Downey’s videos the Latin American environment becomes a thriving and energetic space of relationality; it is more than just an extractive zone filled with natural resources to be controlled by the colonial matrix of power. Furthermore, it is more than just the scenic background of tapes celebrated for their depictions of cultural life. Downey took such great care in filling his videos’ frames with images of environment because, I insist, he recognized how environment and subjectivity were profoundly entwined.

It is the ecological and energetic relation between living things and their environment that Downey also makes us see in VTA and Amazon tapes, alongside “an ode to the indigenous peoples of Americas.” Indeed, my argument is that such an ode already has an ecological dimension within it predicated on how Indigenous peoples live their relation to land. I seek to contribute to the above analyses by affording a renewed attention to the way Downey depicts environment in these videos, how his depictions bear traces of energetic relations, and how such

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<sup>46</sup> Ibid.

relations—especially for the Yanomami—can be read as not only ecological, but also directly opposed to coloniality. This is what the remainder of this chapter will go on to demonstrate.

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I want to begin with the VTA tape *Yucatán* (1973). It came early in the series and contains several elements that work well in opening up the concept of energy as resource. From the introduction of the video's title cards the viewer hears a continuous resonant hum. It is a chorus of croaking frogs and stridulating crickets. A few seconds later, an image appears ostensibly matching the sound with its surrounding. First, it is an empty canoe pulled close to a riverbank. The hum continues as the camera meanders away from the canoe. Then the viewer is offered close-ups of lily pads at the river's edge, and for nearly three minutes after the camera oscillates between the shoreline, the rippling water, and shimmering reflections of trees and clouds on the river's surface. Images like this appear throughout *Yucatán* and many of the VTA and Amazon tapes. Even though this particular video is in black and white, the rippling water and shimmering reflections feel especially vibrant, their forms are in constant motion.

I suggest these are images of environmental energies in action. To that point, at the 3:13 minute mark, Downey's camera lingers on the cloud-encircled sun as it is mirrored in, and faintly swirls with the gentle movements of, the water's surface [fig. 5]. A lens flare occasionally wraps the sun with a thin ring of light as the image undulates with the medium on which it is reflected. If we can take the sun as an iconic image of energy, then perhaps seeing its reflection move with the water's surface serves to metaphorize energy's own mediation by terrestrial surroundings. It is *illuminating* (pardon the pun) to read this as intuiting at a different scale perhaps Vernadsky's claim that our biosphere is "not a region of matter alone, but also as a

region of energy and a source of transformation of the planet.”<sup>47</sup> Downey must have been entranced by this image as it also the last thing viewers see at the end of *Yucatán*. Here the kinetic energy of water and the electromagnetic energy of the sun are brought together through video—itsself a concretely electromagnetic medium of art.

Video and media art historian Ina Blom has written about the interest of early video practitioners—contributors to *Radical Software* and contemporaries of Downey like Nam June Paik, Paul Ryan, and Frank Gillette—in the relation between their medium and water, and more generally the forces of life. This biological association relied not only on the technical fact of video’s live, signalitic energy flows, but also on its capacity to monitor events within our environment at different speeds than human perception. Thus, Blom argues these artists configured video as an agent with unique capacities for surveying the actions and transformations of our natural surroundings, sensitizing viewers to its flows and disturbances during a time of heightened environmental awareness.<sup>48</sup> While VTA does not overtly raise environmental consciousness in the way certain Amazon tapes will later do, Downey is nonetheless participating in the art historically significant use of video to capture energetic relations within the ecological domain.

Later in *Yucatán*, Downey gets more explicit about the relation between energy and environment, with a particular focus on the way human beings find themselves immersed amid the two. It comes towards the end of the video, as the camera meanders over the ruins of the Aztec city in Palenque, Mexico. In a voiceover, Downey tells the viewer

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<sup>47</sup> Vernadsky, *The Biosphere*, 44.

<sup>48</sup> Ina Blom, “Video Life,” in *The Autobiography of Video: The Life and Times of a Memory Technology* (Berlin: Sternberg Press, 2016), 69-97. Of particular interest here in video’s capacity for monitoring the environment is Paul Ryan’s “Earthscore Notational System.” It is both a pedagogical system and a series of video works that seek to “orchestrate perceptual consensus of the natural world.” For more, see: Paul Ryan, “Earthscore Notational System,” [http://www.earthscore.org/New%20Format/article%20pages/earthscore\\_eco/earthscore\\_notational\\_system.html](http://www.earthscore.org/New%20Format/article%20pages/earthscore_eco/earthscore_notational_system.html).

it seems hard to get road directions from the Indians. The difficulty is not linguistic. Their religion and ecology, focused in natural forces, resulted in beneficial attachment to a place. Brain signals interweave with the magnetic fields of a specific geography. Belonging to one place, viewed in constant change, each occasion is essentially identical, but formed by circumstances. A place is a cycle of place, thus other environments are irrelevant, distance does not exist, and the Western sense of direction in space is unnecessary.<sup>49</sup>

It bears repeating that “Brain signals interweave with the magnetic fields of a specific geography.” Downey’s interest in the relation between brain signals and electromagnetism was clearly on display in *Plato Now* last chapter, where telepathic possibilities were entertained amongst meditating performers, shadows, and video within the darkened installation space. Here, it seems this idea is elaborated with a focus towards geographic and cultural specificity—the bringing down-to-earth of electromagnetism so central to the idea of energy as resource. The brain is still rendered as an electromagnetically-sensitive entity, but that sensitivity is now contoured by the very environment one inhabits and the cosmology they partake in: in this case, that of Central American “Indians,” though Downey regrettably does not get more specific than this.<sup>50</sup>

What can be surmised from this voiceover is not only the idea that one’s connection to a place, and spatial orientation within it, is energetically determined, but that determination produces the very cultural differences Downey sought to engage as part of VTA. Here, the static cardinality of “the Western sense of direction” is opposed to a more energetically-lively way of experiencing one’s relation to their surroundings. Downey was no doubt in search of north/east/south/west directions to continue his road trip, but instead was confronted by an Indigenous way of thinking space that contained traces of the very electromagnetic concern his

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<sup>49</sup> Transcription of a voiceover from *Yucatán* (1973), 19:38.

<sup>50</sup> In the Amazon tapes, Downey will get more specific in his discussions of Indigeneity as he makes contact with, and spends nearly a year amongst, a Yanomami tribe of the Upper Orinoco River Valley.

aesthetics of energy had been dealing with in different ways for some time. This hints at the growing significance of Indigeneity for Downey's own thinking about the relations between people, environment, and energy.

In further thinking the relation between people, environment, and energy, the first few moments of Downey's VTA tape *Zapoteca* (1973) are instructive. The video opens with rapid cuts between a small home filled with individuals making music, rolling hills covered in jungle and shrouded by mist, some more images of the sun, ripples in a small puddle, and swaying palm fronds. Those occupying the house are barely decipherable as Downey inverts the video's black and white contrast, creating spectral outlines of smiling faces and hands playing instruments. The music continues playing as Downey's camera zooms in on the puddle's vibratory surface, cutting back and forth between it and the swaying palm [fig. 6a & 6b]. It is almost as if the puddle and plant themselves are dancing to the music, small waves and leaves gently rocking back and forth. The indecipherability of the home's inhabitants can be read alongside the ethnographically-critical analyses laid out above, in so far as here Downey is purposefully forestalling a clear picture of his subjects. But what would be unaccounted for in this reading is the juxtapositions of those subjects and their environment, as the camera ceaselessly turns from one to another. I want to insist it is in repeated juxtapositions like this—across VTA—Downey gestures towards an indissociability between his human subjects, their lived surround, and its more-than-human elements. The idea being, even at the level of the video's montage, the viewer cannot begin to understand one in the absence of the other.

*Guahibos* (1975) can be thought of as a middle ground between VTA and the Amazon tapes, as it documents Downey's repeated attempts to push further into the Venezuelan Amazon and the many bureaucratic obstacles he encountered while doing so. The video is named after an

Indigenous community in Venezuela, which Downey documents throughout. On the one hand, this video contributes much to the argument that this body of work is squarely concerned with issues of subjectivity and its representation. A voiceover from the first few minutes tells us, in Downey's words, "I am looking for my own self in South America. I have been looking for some very pure Indians in South America. The Indians and my own self were hard to distinguish, very hard to find this time. The deeper you go the darker it gets," adding a few moments later, "I have been searching my own shadow in South America."<sup>51</sup>

Shortly thereafter the camera frames Downey's own shadow, cast against the bed of a shallow river, its clear water running quickly over textured stone [fig. 7]. The viewer later sees children playing in the same river, body surfing its rapids, smiling and laughing. Downey, being of mixed Spanish and Indigenous Mapuche heritage, must have felt a profound connection to Latin American Indigeneity, and yet quite far from it—especially after having lived in European and American metropolises like Paris and New York for a decade by this time.<sup>52</sup> In *Guahibos*, I do agree that we have a meditation on subjectivity, but I want to point out that that meditation cannot be thought in isolation from the natural environment that serves as its literal visual ground. Nor should the reader forget the kind of energetic significance Downey always imbued shadows with. They are just as much negative spaces of light as they are the negative spaces of a person's image. After all, in the scene above, that shadow Downey is searching could only appear amid his relation between the sun and stone of the riverbed.

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<sup>51</sup> Voiceover from *Guahibos* (1975), 00:51.

<sup>52</sup> In one entry in the "Travelogues of Video Trans Americas," dated December 28, 1973 and written in Lima Peru, Downey explains: "After ten years spent in Spain, France, and the USA, I realized that I would never adapt to the developed world and, conversely, my own third world would never be a market for my cultural aesthetic makings." Downey, "Travelogues," 326.



After many governmental hassles, being sent from one office to another, trying to “grasp the hand that signs the permit,” and even being arrested without ever being told why, in 1976 Downey finally made his way down the Orinoco to meet the Yanomami.<sup>53</sup> During the seven months he spent amongst them, he shot the Amazon tapes: *More than Two* (1977), *Yanomami Healing 1 & 2* (1977), *The Singing Mute* (1977-78), *The Abandoned Shabono* (1977-78), and *The Laughing Alligator* (1977-79). Here is where we can see most clearly the evolution of energy as resource in relation to Amazonian Indigeneity.

*The Laughing Alligator* is one of the most frequently discussed Amazon tapes, alongside *The Abandoned Shabono*. It is with the former I will begin. About a minute and half into the video, after the viewer is greeted with the smiling faces of Yanomami children, which then smash cuts to American rock bands, Downey recounts the following in voiceover:

in 1975, I got bored of shooting any more video tapes of Americana, because I discovered I wanted to be eaten up by some Indians of the Amazon rainforest. Not as a self-sacrifice, consciously at least, but as the demonstration of the ultimate architecture: to inhabit, to dwell, physically as well as psychically, inside the human beings who would eventually eat me.

Downey is referring here to the Yanomami’s ceremonial practice of endocannibalism, where they consume the cremated remains of their loved ones in a mixture of banana soup—something the video depicts. It is tempting to read this in purely subjective terms, where Downey wishes to see his own subjectivity be literally devoured in an Indigenous ritual by those whose culture he wished he could get closer to.

Yet, what we are also dealing with here is one’s transformation into the very metabolic energies that Downey’s energy as resource had gestured to in the early-1970s—in the *Clean New Race* installation, for example. In the 2011 essay, “Against Shadows; Juan Downey: Into the

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<sup>53</sup> Voiceover from *Guahibos* (1975), 03:03.

Darkness, Towards the Light (Fragments),” Gustavo Buntinx frames Downey’s voiceover somewhat along these lines: “To metabolize is to transform what is alien into an energy that is one’s own.”<sup>54</sup> I follow Buntinx’s lead in claiming that Downey is certainly dealing with the transformations of energy in the Amazon tapes, though I wish to specify more what energies are being dealt with here. Of course, endocannibalistic rituals open onto more avenues beyond the metabolic, but it is important to note that in consuming the loved one’s ashes, the materiality of their body is internally and energetically integrated into another. While I cannot speak to the nutritive content of human ashes, I do think this occasions us to remember, and now explore further within the context of these videos, the concept of energetically-rich materials opened up by Downey’s turn towards energy as resource.

To that end, I want to focus on the depictions of Yanomami shamanic rituals in *The Laughing Alligator*. About half of all men in a given Yanomami community become shamans. Shamans are understood to protect the community from diseases, ward off malevolent spirits, and combat the magics of jealous shamans in neighboring communities. Key to their shamanic practice is the ingestion of hallucinogenic drugs that are made from the virola and longata trees that grow in the Amazon, whose barks are stripped to extract a resin that is then fired and dried into a powder. Other times, the Yanomami use seeds from the amarantha tree—the seeds themselves are traded amongst Yanomami communities. At the final stage of preparation, either of these two hallucinogens are mixed with the ashes of the elizabetha tree, which serves as a binding agent. During the ritual, the fine powder mixture is put into a long wooden shoot that is blown by one shaman into the nose of another. In *The Laughing Alligator*, viewers are given an

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<sup>54</sup> Gustavo Buntinx, “Against Shadows; Juan Downey: Into the Darkness, Towards the Light (Fragments),” in *Juan Downey: The Invisible Architect*, exh. cat., ed. Valérie Smith (Cambridge and New York: MIT List Visual Arts Center and Bronx Museum of the Arts, 2011), 85.

up-close look at the making of the hallucinogen and its resultant effects on the Shamans as they perform a healing ritual.<sup>55</sup>

Yanomami shaman Davi Kopenawa has written extensively on Yanomami cosmology and shamanistic practice, and he regards the hallucinogen—which in Yanomami is called *yākoana* powder—as intimately related to the living forest. “The power of the *yākoana* powder comes from the trees of our land,” he writes, “[s]o when the shamans’ eyes die under its effect, they can call down the *urihinari* forest spirits, the *māu unari* water spirits, and the *yarori* animal ancestor spirits. This is why they are the only ones who truly know the forest.”<sup>56</sup> What is described here is a series of relations between the *yākoana* powder, the forest from which it comes, the spirits who inhabit the forest, and the shamans who are put into contact with those spirits. It is amid this series of effectively environmental relations that shamans are able to “truly know the forest.” I want to suggest that the *yākoana* powder can also be understood as an energetically-rich material, not for anything like its nutritive content, but rather for its ability to generate energies whose potency lies within the spiritual domain. This opens onto how the idea of energy as resource is being pushed further within the context of these later videos.

What’s more, during the sequences where Downey depicts the shamanistic ritual in *The Laughing Alligator*, it’s almost as if video itself is accessing another world foreclosed to those who have not tapped into the *yākoana*’s power. It is then images become saturated with purples, greens, reds, and blues as dazzling psychedelic effects take hold of the video apparatus [fig. 8a]. At one point, the orientation of the camera is flipped, showing a shaman writhing on the ground

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<sup>55</sup> Much of the information above is relayed in *The Laughing Alligator* by Marilys Downey, who is also shown undergoing a Yanomami healing ritual.

<sup>56</sup> Davi Kopenawa and Bruce Albert *The Falling Sky: Words of a Yanomami Shaman*, trans. Nicholas Elliot and Allison Dundy (Cambridge: Harvard University Press, 2013), 370.

as if he is suspended on a ceiling [fig. 8b]. The viewer is also afforded images of the jungle shot from a canoe passing down a river; the forest, reflected yet again in the water's surface, becomes mind-bendingly vibrant, possibly alluding to the way it actually is according to Yanomami cosmology, but inaccessible to the vision of the uninitiated [fig. 8c]. While the *yākoana* powder does need to be metabolized—an energetic process undertaken within the body—these images speak to how Downey's contact with the Yanomami helped expand the scope of energy as resource into unanticipated realms.

I want to now take a moment to highlight the energetic tropes that pervade Yanomami cosmology to strengthen the connections above. Those *xapiri* spirits the shamans commune with in their rituals possess images that are “very bright,” Kopenawa tells us, and “dance” upon surfaces that look “like glass and shines with a dazzling light... White people would say they are **mirrors**. But they are not mirrors to look at oneself, they are mirrors that shine.”<sup>57</sup> With this in mind, perhaps Downey's interest in visual reflections throughout VTA and the Amazon is less about “looking,” and more about the capture of radiant energies.

Writing of how Kopenawa describes the shamanic experience in an earlier text, Brazilian anthropologist Eduardo Viveiros de Castro helps put a point on the presence of radiant energy here. He writes: “Kopenawa's narrative is literally constellated with references to light, brilliance, the stars and mirrors... almost every other sentence features *xapiripë* [another transliteration of *xapiri*] ‘shining like stars’, emitting a ‘blinding luminosity’, a ‘dazzling light’... Hence the primordial quality associated with the perception of these spirits is their *luminous intensity*.”<sup>58</sup> It appears as though the very radiant energies we know Downey had made integral

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<sup>57</sup> Ibid. 56, 63.

<sup>58</sup> De Castro does make a point to say “Undoubtedly, much of this phenomenology of intense light can be associated with the biochemical effects of drugs.” Eduardo Viveiros de Castro, “The Crystal Forest: Notes on the Ontology of Amazonian Spirits,” *Inner Asia* 9, no. 2, Special Issue: Perspectivism (2007): 163. Italics in the original.

to his aesthetics of energy were rediscovered during his time in the Amazon, where the electromagnetism of light became imbued with a spiritual and otherworldly charge. In video being an electromagnetic medium that operates on light, perhaps this is why it was so evocative of—or *susceptible* to—the hallucinogenic force of the shamanic ritual.

Downey himself appeared to be quite captured by the ritual, and explored the relation between hallucination, energy, and spirituality outside of video. During his time in the Amazon, he committed himself to drawing one spiral everyday as part of a series called *Meditaciones*. These works were gathered together in a 1977 exhibition at Galería Alder Castillo in Caracas, Venezuela, titled *Dibujando con los Yanomami* (Drawing with the Yanomami). Many of these drawings consist in concentric swirls outlining a void in the middle of the image [fig. 9]. Most are untitled, but of those he did title a few are noteworthy, such as *Cosmologia* (Cosmology) [fig. 10] and *Perfil de Energia* (Energy Profile), both from 1977. In a text released in conjunction with the exhibition, Downey describes his time with Yanomami, including what appears as an account of his own hallucinogenic experience. He writes,

I close my eyes and light the white round abyss that vivifies the front part of my brain. There is something specific and complete in that white, it ends at a limit that is in itself another field of white. A thousand frontiers open up: the passage from the night to the lighting of the match. Everyday I want to decipher that white; I want to make it travel in my body and vanish. I want the inexhaustible core, or a rounded edge of something luminous that is never complete.<sup>59</sup>

Is this the white light he attempted to draw in the *Meditaciones* series? A white light he glimpsed while under the *yākoana*'s influence? An attempt, outside of video, to try and capture the spiritual-energetic force, “the inexhaustible core, or a rounded edge of something luminous that is never complete” so well-known by the Yanomami shamans he had been living with?

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<sup>59</sup> Juan Downey, “Drawing with the Yanomami,” published in conjunction with the exhibition *Juan Downey: Dibujando con los Yanomami*, Galería Alder Castillo, Caracas, Venezuela, 1977, reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 339.

As a related (and amusing) aside, Downey's friend, video art curator David Ross, invited him to speak at University of California Berkeley on his experiences with the Yanomami once he had returned from the Amazon. Before the lecture, Downey asked Ross if he would like to go on a walk. While Ross assumed it was because Downey wished to smoke some marijuana, it was then Downey told Ross he was currently high on LSD—a powerful, synthetic hallucinogen popular with the American counterculture. LSD is often described in energetic terms, making colors swirl, lights appear more vibrant, and one's own body feel vibratory. Ross exclaimed, "Juan! You have three hundred people waiting to hear from you." Downey told Ross not to worry, and "then proceeded to give the most fantastic lecture!" Ross later realized that, since Downey was speaking of his experiences with the Yanomami, he needed to "put himself back in the space" of hallucinogenic sensation in order to really account for them.<sup>60</sup>

Returning to the energetic spirits Yanomami shamans commune with during their own rituals, Kopenawa tells us they are of the forest, they live in it, and it is theirs. "Though the images of the animal ancestors are numerous in the forest," he explains, "they are not alone. The shamans also call down as *xapiri* the images of all its other inhabitants: those of the trees, the leaves, the lianas, and those of the honey, the soil, the stones, the waters, the rapids, the wind, and the rain."<sup>61</sup> I want to suggest that this casts the forest as a veritable ecology of energetic spirits who are no less interdependent than the forest itself would be when understood in ecosystemic terms. However, to describe the spirits' relation to the forest as "ecological" misses an important point for the Yanomami. As Kopenawa himself says: "Since the beginning of time, *Omama*"—the chief deity of Yanomami cosmology—"has been the center of what the white

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<sup>60</sup> Valerie Smith, "Interview with David Ross, July 28, 2010," In *Juan Downey: The Invisible Architect*, exh. cat., ed. Valerie Smith (Cambridge and New York: MIT List Visual Arts Center and Bronx Museum of the Arts, 2011), 120.

<sup>61</sup> Kopenawa, *The Falling Sky*, 67.

people call **ecology**. It's true! Long before these words existed among them and they started to speak about them so much, they were already in us, though we did not name them in the same way."<sup>62</sup> What Kopenawa is saying is that before ecology ever became a scientific discipline worked on by "white people" in Europe and North America, it existed unnamed as such through *Omama* as a cosmological reality. That is, the basic insight of ecology—thinking about an environment, its energies, and entities as intimately related and interdependent—is integral to the Yanomami cosmology and way of life prior to its existence as an academic discipline or descriptive practice.

I am highlighting this kind of ecological *a priori* of Yanomami cosmology to clarify the ways in which material and spiritual energies and entities are being thought together here as intimately related and environmentally interdependent. At one level, for example, the *yãkoana* is literally derived from the material resources of forest itself. At another level, the *yãkoana* allows shamans to commune with spirits who exist in and give life to that forest as integral elements of it. Indeed, it appears as though Yanomami cosmology makes little distinction between the material and spiritual elements of the forest.

I want to suggest that this Yanomami ecological *a priori* and the energetic tropes of their practices and spirits have two important implications for Downey's understanding of energy as resource at this time. 1) The energies of energy as resource, as they are explored in the Amazon tapes, are infused with both a material and spiritual character; and 2) these material and spiritual energies have an ecological, or relational and interdependent, connection to the surrounding forest. These two points configure Downey's interest in energy within an Indigenous ecological

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<sup>62</sup> Kopenawa continues, "In the forest, we human beings are the "ecology." But it is equally the *xapiri*, the game, the trees, the rivers, the fish, the sky, the rain, the wind, and the sun! It is everything that came into being in the forest, far from the white people: everything that isn't surrounded by **fences** yet." Ibid. 393.

worldview where energy need not only be solar, caloric, or ecosystemic, but also spiritual. In that way, the *yākoana* can still be thought as an energetically-rich material, though that richness resides both in its metabolic effects and the spiritual experiences it generates. Likewise, the forest itself is still describable as an ecosystem, but is now seen to possess energy flows—while still interdependent with the environment—that are contoured by the *xapiri* spirits who reside there, themselves energetic beings. At base, I am trying to make clear how Downey’s affiliation with the Yanomami precipitated an opening up of the possible themes that energy as resource could engage.

To that point, Downey was keenly interested in how the Yanomami conceive of themselves as selves through a process that brings together the different energies, spirits, and even the animals and plants of the forest. He describes this process in “The *Other* Within,” a 1986 lecture delivered at a Rockefeller Foundation conference in Bellagio, Italy. It was there he explained that

For these rain-forest people, the *Self* is considered to be a complex assembly of interlocking spiritual entities. For instance, the plant where the placenta is buried at the birth of a person by the mother, is very often connected to the name of that person... In Yanomami society, the notion of the *Self* already implies a diversity, not only of spiritual principles, but also of physical manifestation. There is an animal in the forest that is a mirror replica of each Yanomami. Since birth, each Yanomami individual is inhabited by the spirit of that animal. They grow and live coupled, without ever seeing each other till the moment of death, when all of the forms of the individual spirit—the shadow, the name, the animal, etc.—meet and coalesce into one self that will live eternally.<sup>63</sup>

I mention this point about Yanomami selfhood as a “complex assembly of interlocking spiritual entities” not only because it reminds us of Downey’s concern with subjectivity expressed by the scholars discussed earlier in the chapter, but also because this assembly is deeply rooted in its

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<sup>63</sup> Juan Downey, “The Other Within,” transcription of paper delivered by Downey during a Rockefeller Foundation Conference, Bellagio, Italy, 1989, reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 436.



environment. Which is to say, the Yanomami self emerges through a series of relations between different inhabitants of the forest that are animal, vegetal, and spiritual.

I claim this is yet another instance of the Yanomami ecological *a priori* mentioned above. Again, to be clear, the Yanomami would not name the self “ecological,” but to the European or North American reader, “ecological” does appear a suitable description of the kind of environmental relationality that generates Yanomami selfhood. And, if one keeps in mind the energetic register used by Kopenawa to described the spirits of Yanomami cosmology, then I suggest Downey saw in this “complex assembly of interlocking spiritual entities” a new kind of energy flow.<sup>64</sup> That is, through his experiences with the Yanomami he realized how the self could be constituted through an energetic process that was simultaneously material, spiritual, and of the land—a process that pushed his idea of energy as resource in new directions during his time in the Amazon.

Now, just because Downey became increasingly interested in the spiritual side of energy and its flows does not mean he lost sight of the more historical and problematic concerns anticipated by energy as resource. His other major Amazon tape, *The Abandoned Shabono* (1977-1978), is crucial here because returns this discussion back towards the consequences of human energy use, especially in relation to resource extraction in the Amazon. It is in this video that the stakes of the Western world’s quest for energetically-rich materials are brought fully into view and a nascent decolonial critique emerges. That is, if *The Laughing Alligator* can be thought as a kind of demonstration of otherworldly energies, especially during the hallucination sequence, then *The Abandoned Shabono* appears more like an accounting for the destructive side of energy as resource.

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<sup>64</sup> Viveiros de Castro, “The Crystal Forest,” 163.

The *shabono*, after which this video is named, is the communal dwelling in which Yanomami live; it is made of biodegradable materials taken from the forest and eventually decomposes and returns to the very environment from it is made and in which it is located. Downey spends time elaborating the sustainability of the *shabono*, and even casts it in energetic terms as a structure that “participates in the forest’s own energy flow.”<sup>65</sup> This phrase borrows directly from ecosystem discourse via the concept of “energy flow,” though the kind of energy here is not clearly specified. One can imagine, in line with the Yanomami, that the forest is conceived as an ecology of material and spiritual energies and that the *shabono*—built from that very forest—is a kind of living with those energies. However, I want to suggest Downey’s invocation of ecosystemic discourse achieves two things: 1) it demonstrates the minimal impact that Yanomami architecture has on its surrounding environment; and 2) it implicitly raises the question of anthropogenic disturbances so central to the ecosystemic discourse of the late-1960s and 1970s.<sup>66</sup> It is in the context of anthropogenic disturbance and environmental effect that the final moments of *The Abandoned Shabono* find their critical force.

In a sequence much more reminiscent of a traditional ethnographic documentary film, Downey interviews anthropologist Jacques Lizot (whom he shared his time with the Yanomami between 1976 and 1977). During this sequence, Lizot asks a rhetorical question, wondering

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<sup>65</sup> A voiceover from the video states: The Yanomami weave lightweight, flexible buildings with local perishable materials from the neighboring forest. They know well the vegetal tissue will rot, in time for them to move and place another circular roof elsewhere in the virgin forest. The Indian approach, occupying a place only for a period of time determined by the duration of the building’s materials creates an architecture which participates with the forest’s own energy flow.” Voiceover from *The Abandoned Shabono* (1977-1978), 03:39.

<sup>66</sup> Here I am recalling, for example, the warning provided by G. Evelyn Hutchinson in the essay “The Biosphere,” 47, 53. From a different angle, Julieta González reads Downey’s interest in the *shabono* as a kind of de-technologized realization of his earlier interest in cybernetics. She writes, “in the midst of the jungle... Downey found the cybernetic utopia he had been looking for throughout his entire career as an artist. The architecture of the *shabono*... revealed itself to Downey as the most perfect expression of a cyclical and ecological architecture.” Julieta González, “Beyond Technology: Juan Downey’s Whole Earth,” *Afterall: A Journal of Art, Context and Enquiry*, no. 37 (Autumn/Winter 2014): 25.

upon what has industrial civilization been built? Upon the destruction of all minority cultures, tribal civilizations, ethnic minorities in our own countries. Industrial civilization was constructed upon the destructions of all other societies, and it is intolerant, it is racist, it requires more and more space, more and more resources; to obtain this space and these resources, it destroys others.<sup>67</sup>

Downey then asks what might be done to save the sustainable lifestyle of the Yanomami in the face of an industrial society seemingly predicated on their eradication. Lizot responds pessimistically, suggesting total isolation could be one solution, though this would be impossible since contact has already been made between us and the Yanomami. Noting Lizot's pessimistic tone, Downey replies: "You are the prophet of death about the Indians, then?" Lizot, gravely: "I am not only the prophet of the Indian's death, but I believe as well that I am the prophet of our own death. One must clearly understand that the death of the Indians prefigures our own death." While this claim clearly sidesteps the potency of Indigenous resurgence against the forces of coloniality, it does hint at the consequences of the unfettered dispossession of Indigenous lands and its attendant destruction of Indigenous ways of life. Lizot is effectively tying together industrialized society's drive for resource extraction and the elimination of Indigenous peoples. The implication being that very same destructive drive will eventually lead to the elimination of non-Indigenous peoples because of how environmentally devastating it is.

Anthropologist Eric Michael's voiceover concludes *The Abandoned Shabono* and explicitly frames resource extraction as a threat to Amazonian Indigeneity. Noting that, for generations, the Yanomami were more or else protected not just by the "vigilance of the shamans within the wonderfully adaptive skin of their *shabonos*," but also because they had made their home in some of the most impenetrable reaches of the Amazon—places "where [industrialized] civilization was not interested in going." "Not interested in going," Michaels continues, "until

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<sup>67</sup> Jacques Lizot through a translator, voiceover from *The Abandoned Shabono* (1977-78), 25:00.

geologists discovered useful minerals in this part of the world. The future of the Yanomami culture is uncertain, for they cannot combat the spirits of the industrial world, the greed for resources, and technological society's insistence on remaking the world in its own image."<sup>68</sup> I want to suggest that this is where a critique of the concept of energy as resource comes through clearest.

We are no longer dealing with the energetically-rich material of the *yākoana*, for instance, an indigenous resource sourced from the forest itself and put towards spiritual ends. In this video, with its many shots from the interior of the *shabono*, it is as if Downey wants the viewer to temporarily inhabit the structure to see anew what resides beyond and threatens it—a diametrically opposed, extractive relation to environment perpetrated by industrialized societies. We are now dealing with a non-Indigenous rendition of the energetically-rich materials of energy as resource: minerals not too dissimilar from the nitrates of the Atacama that propped up the Chilean economy in the nineteenth century and found their way into Downey's installations from earlier in the chapter. Moreover, Michaels is alluding to the devastating effects of industrialized society's attempts to extract and horde such resources, especially as those effects are suffered by the Yanomami. *The Abandoned Shabono* thus serves to remind viewers of the problematics of energy as resource, the ways in which it opens onto extractive logics that destroy both peoples and environments.

What I have tried to demonstrate in this section is not only the idea that VTA and the Amazon tapes are legible within Downey's aesthetics of energy, but also that his understanding of energy as resource (an integral element of those aesthetics) developed and transformed over the course of the two projects. By either depicting the Latin American environment itself as

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<sup>68</sup> Voiceover from *The Abandoned Shabono* (1977-78), 26:25.

bearing traces of energy, in the shimmering reflections of the sun upon water's surface, for example, or in exploring the use of energetically-rich materials as integral to Indigenous lifeways, I have tried to offer an account of these videos that foregrounds Downey's expanded conception of energy as resource. Moreover, I have tried to demonstrate how that expanded conception has an ecological dimension built in—a kind of energetic relationality that links different entities with their environment. We know from earlier in the chapter that Downey was thinking about the relations between different forms of energies, entities, and environments, but it was not until his time in the Amazon that he moved beyond a metabolic and ecosystemic model of energy as resource to something that was simultaneously material, spiritual, and profoundly indebted to Yanomami cosmology. It appears as though Downey rediscovered the energy flows of ecosystems and organisms within a Yanomami worldview that regards the forest as a teeming ecology of energetic beings—both human and more-than-human.

This is not to claim that Downey shifted attention away from those human uses of energy and energetically-rich materials that are environmentally destructive or spiritually bankrupt. I have concluded this section with *The Abandoned Shabono* because it critically returns us to the extractive side of energy as resource. In the following section, with the help of decolonial and Indigenous scholars, I will attempt to clarify how Downey's understanding of energy as resource is able to bring together both a critique of extractivism and a demonstration of solidarity with Amazonian Indigeneity, and why this is important.

### “Friendship for the Forest”

Earlier in the chapter I argued that during the early-1970s Downey was becoming ever more sensitive to the ways in which different forms of energy becomes resources. The term “resource”

here is operating at two levels. The first regards how different forms of energy, like solar radiation or the caloric energy of food, sustain and enable the life of environments. The second regards how nations and corporations throughout modernity have sought out, extracted, and accumulated energetically-rich materials, such as fossil fuels or certain kinds of minerals (oftentimes from former colonies), and the planetary consequences of this. In the previous section, I attempted to show how Downey's understanding of energy as resource transformed over the course of VTA and his time in the Amazon. Specifically, I claimed that through his experiences with the Yanomami, Downey expanded the scope of what kinds of energies could enter into the domain of energy as resource, with a special focus on the spiritual energies of Yanomami cosmology. It was then Downey began to see the Amazon as a teeming ecology of material and spiritual energies that were nothing if not resources for Yanomami life. Though, as we saw in *The Abandoned Shabono*, Downey was still thinking about the extractive side of energy as resource, this time in direct and consequential relation to the Indigenous peoples of the Amazon.

In this section, with the help of decolonial and Indigenous scholars, I will endeavor to explain how Downey's understanding of energy as resource is able to operate both from the place of an extractivist critique and of solidarity with Amazonian Indigeneity. The objective here is to clarify how his idea of energy as resource is able to attend to both of these elements, and the significance of doing so. Moreover, I will show how Downey's thinking of the different registers of energy as resource (material, spiritual, extractive) helps us understand the deep relation between the critique of extractivism and Indigenous solidarity. What is at issue here is a trajectory wherein as Downey expanded the scope of energy as resource through his contact with

an Amazonian ecological worldview, the harm of extractive logics became ever clearer and in need of critique.

Seeing as the contemporary critique of extractivism has emerged out of decolonial thinking, it will help by beginning with an outline of the decolonial project. This will allow us to situate the extractivist critique within it, and then go on to read Downey's energy as resource through an extractivist lens.

Decoloniality begins with coloniality. This latter concept, usually written as coloniality/modernity, was first theorized by Peruvian sociologist Aníbal Quijano and meant to highlight the indissociability between modernity and the advent of colonization by European nations.<sup>69</sup> If colonization is a historical moment, then coloniality is the propagation of that moment's effects across time. As Quijano originally put in 1991, "in spite of the fact that political colonialism has been eliminated, the relationship between the European – also called 'Western' – culture, and others, continues to be one of colonial domination."<sup>70</sup> The effects of that domination, on the epistemological level, according to decolonial scholar Walter D. Mignolo, "lead us... to believe that Western knowledge is the final destination and that all other knowledge on the planet, local histories and non-Western languages, have to catch up or else be left behind."<sup>71</sup> Conversely, decoloniality is an imagining otherwise to a contemporary world formed by coloniality. It is a call to critically reject the assumed primacy of initially European modes of thought and being, and to foreground in their place the plentitude of those theories,

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<sup>69</sup> Decolonial scholar Walter D. Mignolo frames it this way: "In every domain of life, since the sixteenth century, Western narratives of renaissance, enlightenment, and modernity have gone hand in hand with coloniality. There is no modernity without coloniality" Walter D. Mignolo, "Decoloniality and Phenomenology: The Geopolitics of Knowing and Epistemic/Ontological Colonial Differences," *The Journal of Speculative Philosophy* 32, no. 3, Special Issue with the Society for Phenomenology and Existential Philosophy (2018): 373.

<sup>70</sup> Anibal Quijano, "Coloniality and Modernity/Rationality," reprinted in *Cultural Studies* 21, nos. 2-3 (March/May 2007): 169. Originally published as "Colonialidad y Modernidad/Racionalidad," *Perú Indígena*, 13, no. 29: 11–20.

<sup>71</sup> Mignolo, "Decoloniality and Phenomenology," 365.

practices, and lifeways that are to this day being suppressed the logics of modernity/coloniality.<sup>72</sup> Especially important here is the work of Indigenous thinkers, like Yanomami shaman Davi Kopenawa, whose work has been critical to this chapter, and others to be mentioned below.

In *The Extractive Zone: Social Ecologies and Decolonial Perspectives*, cultural studies scholar Macarena Gómez-Barris highlights the entanglement between coloniality and the capitalist exploitation of natural resources within former European colonies, especially those of Latin America. As she puts it, “by using the term *extractive zone* I refer to the colonial paradigm, worldview, and technologies that mark out regions of ‘high biodiversity’ in order to reduce life to capitalist resource conversion.”<sup>73</sup> Gómez-Barris is describing a process whereby coloniality and capitalism work together in evacuating from a land everything but what natural and human resources can be forcefully wrested from it. When Quijano says that even though “political colonialism has been eliminated” a state colonial domination still persists, the unfettered extraction of former colonies’ natural resources is one way in which this is true. Extractive logics like those Gómez-Barris describes in her text have been entangled with coloniality from the very beginning, only growing more pervasive as capitalism has advanced—to the detriment of former colonies and indeed the planetary biosphere itself.

I claim that in Downey’s attention to the national and economic struggles over natural resources and their widespread consequences resides a nascent extractivist critique that only becomes clearer during his time in the Amazon. When Gómez-Barris talks of “capitalist resource conversion,” or the transforming of minerals and land into commodities and extractive zones, we

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<sup>72</sup> Decolonial theory, by its nature as a disruption of Western epistemological dogmas, is internally heterogenous and there is no singularly defining way to think decoloniality. For an overview of the concept and an exploration of its different facets, see: Catherine E. Walsh and Walter D. Mignolo, *On Decoloniality: Concepts, Analytics, Praxis* (Durham: Duke University Press, 2018).

<sup>73</sup> Macarena Gómez-Barris, *The Extractive Zone: Social Ecologies and Decolonial Perspectives* (Durham: Duke University Press, 2017), xvi.



could say that what is at issue here are energetically-rich materials—something we know Downey had been thinking about since at least 1970. To be clear, it seems like in *Make Chile Rich*, Downey was in favor of resource extraction concerning the nitrates of the Atacama, so as long as it was Chile doing the extraction for his home country's own benefit. This nationalist sentiment vis-à-vis extraction can be similarly glimpsed in his 1973 work, *Anaconda Map of Chile* [fig. 11]. This installation was comprised of a large wooden box whose bottom was a map of Chile. Originally, Downey had placed a live anaconda in the box, allowing it slither over the represented terrain in clear reference to the domineering presence of the Anaconda Copper Mining Company—an American corporation that operated in Chile and played a part in the military coup of Augusto Pinochet. During its exhibition, Downey was forced to remove the Anaconda in an act of institutional censorship. While these two works evince Downey's engagement with extractive logics and energetically-rich materials (copper is an unparalleled conductor of electricity), they are not necessarily critical of extraction itself. This would later change.

In the summer of 1973, while Downey was in taping VTA in La Venta, Mexico, he witnessed firsthand the environmental consequences of resource extraction, and wrote about it in his travelogues. He recounts seeing “the archaeological site... scattered in ruins, an empty jungle defoliated by the interests of Petroleo Mexicano. The brutal extraction of oil has burned the jungle.”<sup>74</sup> Fossil fuels are an emblematic energetically-rich material, and it was here Downey saw how the human quest for them was linked directly to ecological destruction. With this image in mind, his later experiences in the Amazon and time amongst the Yanomami must have carried an additional significance. Once the forest was revealed to him as not only a material space of

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<sup>74</sup> Downey, “Travelogues,” 325.

ecological interaction, but a spiritual space as well, the gravity of resource extraction came into full view. For the Yanomami, the energetically-rich materials of the Amazon include not only its sources of metabolic sustenance in the form of food, but also those *xapiri* who provide spiritual sustenance for the well-being of their communities. While they inhabit the same environment, these are clearly distinct from the mineral resources targeted by extractivist logics.

I want to suggest that Downey concludes *The Abandoned Shabono* with a warning about the threat posed by “the industrial world” and its “greed for resources” to Yanomami life because he realized a profound disconnect at work here between conflicting visions of energy and environment.<sup>75</sup> In the extractivist view, the Amazon must only contain energetic resources—like minerals, for instance—that are convertible into commodities. It cannot make space for, and indeed, must eliminate the possibility of, other kinds of energies or energetically-rich materials that would warrant the Amazon’s protection from extractive efforts, like the spiritual energies of the *xapiri* who make the forest what it is. It is in Downey’s expanding the possibilities of what counts within energy as resource that throws into the relief the contrast between the extractivist view and the more ecologically-inclined, material and spiritual view of the Yanomami.

What is at issue here, and what the transformation of Downey’s energy as resource helps us see, is the idea that Indigenous cosmologies afford land a kind of active relationality that is precisely what the extractivist view tries to ignore. In *The Laughing Alligator*, when Downey tries to capture hallucinogenic vibrancy of the Amazon as seen under the effect of the *yākoana*, this is just one instance of what is invisible to extractivism. Under the extractivist gaze, as it is under the settler-colonial gaze to which it is historically related, “human relationships to land are

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<sup>75</sup> Voiceover from *The Abandoned Shabono* (1977-78), 26:25.

restricted to the relationship between owner and property.”<sup>76</sup> Which to say, what extractivist and colonialist logics evacuate from land are the ongoing and meaningful relations between and forms of agency of inanimate materials, spiritual entities, and human beings. Thinking with Indigeneity—Amazonian or otherwise—contra coloniality and extractivism means claiming, and I suggest Downey would agree here, that “[l]and is not just a material object but a ‘way of knowing, of experiencing and relating to the world and with others.’”<sup>77</sup> Indigenous scholars have repeatedly made similar claims.

Take for example Dakota education scholar Vine Deloria. For him, North American Indigenous peoples’ relation to land can be captured in what he calls “Indian metaphysics.” He writes:

The best description of Indian metaphysics was the realization that the world, and all its possible experiences, constituted a social reality, a fabric of life in which everything had the possibility of intimate knowing relationships because, ultimately, everything was related. This world was a unified world, a far cry from the disjointed sterile and emotionless world painted by Western science.<sup>78</sup>

Here we have a powerful distinction between the “sterile” coloniality of European and North American thinking, and the lively relationality of Indigenous thought. Sisseton-Wahpeton Oyate scholar Kim Tallbear references Deloria’s work above, as well as that of Charles Eastman, when she writes that they “can be understood within a framework that posits social relations not only between humans and ‘animals,’ but also between humans and ‘energy,’ ‘spirits,’ ‘rocks,’ and ‘stars,’ in the constitution of American Indian knowledge about the world.”<sup>79</sup> What Tallbear is

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<sup>76</sup> Paul Berne Burow, Samara Brock, and Michael R. Dove, “Unsettling the Land,” *Environment and Society* 9: Indigenous Resurgence, Decolonization, and Movements for Environmental Justice (2018): 59.

<sup>77</sup> Ibid. 60. Elements of this quote are taken from: Glen Coulthard, *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition* (Minneapolis: University of Minnesota Press, 2014), 61.

<sup>78</sup> Vine Deloria, “American Indian Metaphysics,” in *Power and Place: Indian Education in America*, eds. Vine Deloria Jr. and Daniel Wildcat (Golden, CO: Fulcrum Publishing, 2001), 2.

<sup>79</sup> The writing of Eastman, Tallbear refers to is worth quoting: “The elements and majestic forces in nature, Lightning, Wind, Water, Fire, and Frost, were regarded with awe as spiritual powers, but always secondary and intermediate in character. We believed that the spirit pervades all creation and that every creature possesses a soul in

getting at is the idea that Indigenous thinking entertains relational possibilities inclusive of and also beyond the human sphere.

Now, to be clear, I do not want to assume an automatic correspondence between the insights of the North American Indigenous thinkers above with those of the Yanomami. However, I do think the importance of actively relating to one's environment can be understood as a throughline that connects these different Indigenous modes of being in opposition to extractive coloniality.

To elaborate on this connection, I want to return to the work of Yanomami shaman Davi Kopenawa. Much of his writing concerns the disparities between Yanomami culture, its relation to the forest, and the culture of “white people”—which can be understood as a metonym for predominantly European and North American culture—and how they think of and experience the forest. He laments the way white people literally (do not) see the forest itself: “Even when they fly over it in their planes, they don’t see anything. They must think the soil and its mountains are placed there without reason and that the forest is just a great quantity of trees. But the shamans know it belongs to the *xapiri* and that it is made of their countless mirrors!”<sup>80</sup> That is, under the European/North American gaze and its attendant extractivist tendencies, the forest literally becomes a quantifiable entity devoid of any kind of structuring logic. What goes undetected in this gaze is the spiritual liveliness of the forest, which in Yanomami cosmology is profoundly energetic.

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some degree, though not necessarily a soul conscious of itself. The tree, the waterfall, the grizzly bear, each is an embodied Force, and as such an object of reverence.” Charles Eastman, *The Soul of the Indian* [originally published in 1911] (Lincoln: Bison Books, 2008), 14-15. Quoted in Kim Tallbear, “Beyond the Life/Not-Life Binary: A Feminist-Indigenous Reading of Cryopreservation, Interspecies Thinking, and the New Materialisms,” in *Cyropolitics: Frozen Life in a Melting World*, eds. Joanna Radin and Emma Kowal (Cambridge, MA: MIT Press, 2017), 191.

<sup>80</sup> Kopenawa, *The Falling Sky*, 65.

Put another way, the energetic resources of the forest are not only what can be quantified and extracted. To really foreground the difference between the Yanomami vision of environment and that of white people, Kopenawa explains:

We have friendship for the forest because we know that the *xapiri* spirits are its true owners. The white people only know how to abuse and spoil it. They destroy everything in the forest—the earth, the trees, the hills, the rivers—until they have made its ground bare and blazing hot, until they even make themselves starve. On the contrary, we never die of hunger in the forest. We only die of the white people’s *xawara* epidemic fumes in our houses.<sup>81</sup>

Here, Kopenawa frames the social relations between the Yanomami and their forest as one of a “friendship” predicated on their awareness of its spiritual nature—they know the *xapiri* own the forest, and it is more than just a terrestrial biome or zone of extractable resources. Conversely, in the absence of such friendship, white people do nothing but destroy the forest. The idea of making “its ground bare and blazing hot” can be understood as not only foregrounding the immediate consequences of an extractivist logic, but gesturing to its planetary effects vis-à-vis climate change. Kopenawa says white people “[n]ow call themselves “people of the ecology” because they are worried to see their land getting increasingly hot.”<sup>82</sup>

Again, what we have here are conflicting visions of land. On the one hand, there is the extractivist view that reduces a given land to only what quantifiable and commodifiable resources it can provide; and on the other, an Indigenous view that treats a land as a lively space of relationality that is precisely unquantifiable or uncommodifiable by extractivist means. I believe that in Downey’s development of the concept of energy as resource, he comes to understand this distinction and clearly takes a side. It was through his time with the Yanomami that he came to realize just what entities and things can be understood in energetic terms and the

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<sup>81</sup> Ibid. 398-99.

<sup>82</sup> Ibid. 393.

ways in which they become resources for life. The energetically-rich materials of minerals can be thought of as one kind of resource, but so can the energies of the *xapiri*. The difference being, the brutal extraction of the former necessitates the destruction of the latter. In Downey's expansion of the possibilities of what counts within energy as resource he grew to stand in solidarity with the Yanomami against the logics of extraction, and the final moments of *The Abandoned Shabono* are the clearest evidence of this.

More recently, Indigenous visions of land are making their way into political and environmental discourse with the hope of counteracting the forces of extraction and offering solutions to the climate devastation it propagates. Anthropologist Eduardo Kohn was involved in one such effort undertaken by the Runa (or Kichwa) community of Sarayaku, an Indigenous community of the Ecuadorian Amazon. He worked with them in the development of a legal proposal—informed by their own Indigenous ontology of land—that would protect what “they call *Kawsak Sacha* or the Living Forest,” which was presented at the COP21 Climate Summit in Paris in December, 2015. He includes this following excerpt from the proposal:

*Kawsak Sacha* is where [we] interrelate with the supreme beings of the forest in order to receive the guidance that leads [us] along the path of *Sumak Kawsay* (Good Living). This continuous relation that we [...] have with the beings of the forest is central, for on it depends the continuity of the Living Forest, which, in turn permits a harmony of life among many kinds of beings, as well as the possibility that we all can continue to live into the future.<sup>83</sup>

The idea being, the Runa were seeking to implement their own vision of land as a real space of relationality beyond the material or extractive as a legal, recognized, a protective measure. That is, under *Kawsak Sacha*, the forest would be treated internationally in the terms of those peoples indigenous to it—meaning, the forest would be seen as much more than just passive container of

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<sup>83</sup> Eduardo Kohn, “Ecopolitics,” in *Anthropocene Unseen: A Lexicon*, eds. Cymene Howe and Anand Pandian (Santa Barbara: Punctum Books, 2020), 139, 140. For more on the idea of the “living forest,” see: Eduardo Kohn, *How Forests Think: Toward an Anthropology Beyond the Human* (Berkeley: University of California Press, 2015).

raw energetic resources ripe for plundering. It would be recognized as a space of spiritual beings who are just as real as its raw materials. To some extent, what is at issue in such a proposal—to frame this in the terms of Downey’s practice—is asking what kinds of energies, energetically-rich materials, and energetic resources of the forest do we want to protect and cultivate? Those that will lead to the forest’s destruction and the disruption of the planetary biosphere, or those that are materially and spiritually integral to the forest’s (and our) thriving, or “*Sumak Kawsay* (Good Living)”?

What I have tried to show in this chapter is Downey’s visualizing of the way different elements within an environment—both living and nonliving, spiritual and material—create relations among one another that are legible within his aesthetics of energy. Whether it be how the sun’s reflection in a river’s surface captures the mediation of solar energy by terrestrial surroundings, or the way Yanomami shamanic rituals use the energetically-rich material of the *yākoana* powder to make contact with forest spirits, I regard these as meaningful demonstrations of environmental relationality where diverse forms of energy can be thought as resources. In thinking them as resources, the stakes of what else humans have regarded as energetic resources becomes clearer. In Downey’s opening up of the concept of energy as resource beyond just the ecosystemic or metabolic, he sharpens his critique of extractivist logics and stands solidarity with an Indigenous ecological worldview. What I have tried to explain above is that such a critique and solidarity are indissociable, and that in the development of Downey’s concept of energy as resource over the course of VTA and the Amazon tapes this becomes clear.

## Conclusion

In this chapter I have attempted to offer an alternative reading of what Julieta González has called “one of the most singular bodies of work in recent art history”: Juan Downey’s VTA and Amazon tapes.<sup>84</sup> Rather than focusing explicitly on their critiques of ethnographic observation and the impossibility of objective cultural representation—as other scholars have done before me—I turned instead to the videos’ depictions of landscape, environment, and the energetic relations that emerge from them. In doing so, I have hoped to configure these videos within, and as novel elaborations of, Downey’s continually evolving aesthetics of energy.

Key to this was articulating a shift in Downey’s interest in energy from the more speculative and experimental confines of a work like *Plato Now*, towards the more terrestrially grounded concerns of energy as resource. And while I have argued the ways in which Downey’s work from this period was attendant to the historically situated forces of resource extraction, for example, it is important to note that his aesthetics of energy nonetheless found its way again to unanticipated realms; realms where forest spirits dance on mirrors and shine brilliantly in ways especially amenable to the electromagnetic medium of video and an artist deeply committed to its energies. It was while in contact with these realms Downey brought into orbit the environmental concerns prompted by coloniality’s extractive logics, the potentials of Indigenous visions of land, and a new understanding of energy attendant to both. It is in that sense I have hoped to configure this “singular” body of work, with its ecological and decolonial insights, within the coordinates of Downey’s aesthetics of energy.

While Downey would not return to the Amazon after the 1970s, his experiences there transformed him. He would later go on to produce more single-channel videos in a quasi-

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<sup>84</sup> Julieta González, “Introduction,” in *Juan Downey: el ojo pensante*, exh. cat., ed. Marilys Belt de Downey (Santiago: Fundación Telefónica, 2010), 178.



ethnographic documentary style, this time aimed at the histories of representation in Renaissance Europe, and the means by which that culture created its own conditions and systems of visibility. These videos were part of a multimedia exploration of painting, classical music, architecture, and even Greek myths, and perhaps the most difficult to configure within what I have been calling Downey's aesthetics of energy. That is because discussions of electromagnetism and environmental energies appear *almost* completely replaced by meditations on language, visuality, text, and semiosis. However, what if Downey's commitment to the aesthetic potentials of electromagnetism is as strong as it always has been, though articulated in more subtle ways?

This is the wager that defines the final chapter. There I will turn to some of the lesser-known drawings of Downey's later career with the hopes of articulating the presence of his aesthetics of energy in a body of work that appears most thematically and medially distant from it. To find traces of the aesthetics of energy here would be a testament to the persistence and transformability of it within Downey's practice. And it is to that task I will now turn.

## Chapter 5 – The Radiant Unknown

### Introduction

What has been articulated throughout this dissertation is the development of and transformations within Juan Downey's aesthetics of energy. In the very first chapters, his aesthetics of energy was concerned with the materiality of electromagnetism, how it could be channeled in the making of sculptures, performances, and installations, and more generally, the nuance of its interactions with human perception, technical media, and our built and unbuilt environments. The previous chapter argued that, during the course of Downey's *Video Trans Americas* and his time in Venezuelan Amazon, his aesthetics became sensitive to energies inclusive of yet also beyond the electromagnetic. It was there during the mid- and late-1970s we saw Downey engaging the metabolic and even spiritual energies of Amazon, a shift precipitated by his time with the Yanomami. From that time, Downey developed a decolonial understanding of energy that operated simultaneously as a critique of the logics of extraction and a demonstration of solidarity with Amazonian Indigeneity. While the radiant energies of electromagnetism were still present in these later works—appearing in shimmering images of the sun or through the vivid processing techniques of the video medium—it was clear that Downey was broadening the scope of what his aesthetics of energy could attend to.

In this final chapter, we are confronted with a body of work that at first glance appears to have little recognizable connection to the energetic concerns of Downey's previous projects, even in their expanded sense. From the later-1970s throughout the 1980s, Downey demonstrates a critical concern with the Western-European Post-Renaissance and Baroque conventions of visibility, representation, illusionism, and history. He produced videos, installations, and drawings that take on the paintings of Diego Velázquez, the power of mirrors in art and

architecture, and more generally the interactions between vision, reflection, and subjectivity in Europe during the seventeenth century and Downey's own day. All of this is to say, it seems we are far away from the energetic concerns relevant to this dissertation. Downey is still making use of familiar media like video and installation, but the thematic orientation of his later career presents a challenge to the aesthetics of energy framework for which I have been arguing. At least, this is how the situation initially appears.

In this chapter, I will argue that Downey's commitment to the aesthetics of energy is as strong as it always has been, though is articulated in more subtle ways. More generally, this chapter strives to identify the enduring presence of Downey's aesthetics of energy where it seems most thematically distant. I will not dispute the fact that Downey is thinking deeply about Baroque visuality and related topics, though I will insist that he presents these topics in ways that are legible within his aesthetics of energy. The idea is to demonstrate that, even as Downey takes on the historical conventions of pictoriality, for instance, traces of his aesthetics of energy can still be glimpsed. These traces are testaments to the persistence and transformability of Downey's aesthetics of energy that, moreover, help us identify the innovativeness of this later body of work. While Downey engages Baroque masterpieces and turns toward more traditional mediums like drawing—and Downey's drawings are the anchor of this chapter—he does so with an electromagnetic orientation, one that seeks to reveal radiant energies and forcefields in some of the most art historically unlikely places.

I will begin affirming Downey's continued commitment to the aesthetics energy, even during this later period, with the help of the artist himself, as it were, through a contemporaneous text of his wherein he frames his attachment to the video medium in explicitly energetic terms. Written first in Spanish in 1985 and then revised and expanded in English in 1990 (three years

before the artist's untimely passing), "The Smell of Turpentine" can be thought as something like a late-career manifesto, one that lays out key themes of Downey's work in video with a particularly candid reflectiveness. I suggest it is crucial that Downey begins this text with a metaphor likening his desire to connect with others through video to the energetically-specific actions of the electron within the video apparatus itself. Thus, this section unfolds the significance of this electromagnetic metaphor for Downey's aesthetics of energy. Moreover, I use this metaphor as an occasion to revisit the place of electromagnetism in Downey's earlier career and to speculate what about the energy appeared so alluring to the artist. To this last point specifically, I characterize electromagnetism as a force that can act in unseen ways to create unexpected relations between all manner of entities, thus positioning it as especially well-suited to exploring the relation Downey held between art and the unknown.

After having taken this first step to solidify the presence of Downey's aesthetics of energy within the frame of his 1980s practice, I continue doing so in the following section through a detailed formal analysis of his drawings of the same period. These drawings all operate in the same thematic scope of his interests in the Baroque visuality of seventeenth century Spain, and nearly all of them are studies of Velázquez paintings. More specifically, my analysis places emphasis on a reoccurring motif in these drawings: a spiraling of delicately fine lines that terminates in the center of the image, and out of which Downey's figures, scenes, and spaces emerge. My contention is that this striated spiral motif can be read as the visualization of radiant energies, a point I ground within the context of Downey's earlier *Meditations* drawings (which similarly make use of spiraling lines and was described by Downey as an attempt to picture radiant light); the first attempts to visualize the electromagnetic field by Michael Faraday during the nineteenth century (which bear a striking resemblance to Downey's striated spiral motif); and

the use of lines to depict light throughout the history of art. It is through these contextual connections that I argue Downey's 1980s drawings are attempts to reveal the latent radiant energies he felt emanating from the iconic works of Baroque painting. This is what it means to say he brings an electromagnetic orientation to art historically unlikely places, and therein the innovativeness lies: even while Downey was working on subject matter and in media that has little immediate relation to energetic processes—especially in comparison to video—he still manages to hold art and electromagnetism within the same orbit.

The final section seeks to tie together the threads of this chapter through a brief analysis of an impactful event Downey experienced in 1962 at the very beginning of his artistic career. It was then, while he was living in Madrid, he would pay daily visits to Velázquez' *Las Meninas* at the Prado Museum. In recalling these visits, Downey writes of being confronted by the “Radiant Unknown,” a term he uses to describe the captivating experience of being immersed in the imaginary space of the painting. Crucially, Downey regards the light of the gallery space as a kind of catalyst for this encounter, a point which I unfold to return us to thinking about light and electromagnetism as a kind of media capable of generating unexpected and alluring connections along the lines of the chapter's first section. In this way, we are afforded a glimpse of how Downey saw *Las Meninas*: an artwork already entangled with radiant energies, prior to any kind of electronic or technological mediation. Thus, the innovativeness of Downey's drawings—where Baroque imagery is imbricated within forcefields—appears as an artifact of this earlier encounter. I conclude by suggesting the “Radiant Unknown” as a compelling summation of many of the ideas broached in the dissertation as a whole: where art, energy, and the unexpected find common ground in the art of Juan Downey.

### “The Smell of Turpentine”

To make the case that, even in his later life, Downey’s practice still hewed close to an aesthetics of energy—however seemingly far removed his later works might first appear from such an aesthetics, especially in comparison to earlier chapters—I want to set the stage with the help of Downey himself. To do so, I will turn to a short essay written by Downey titled “The Smell of Turpentine.” It was published first in Spanish in 1985 and then later revised, expanded, and published in English in the edited volume *Illuminating Video: An Essential Guide to Video Art* (1990).<sup>1</sup>

“The Smell of Turpentine” can be understood as strengthening the connections between Downey, video, electromagnetism, and his aesthetics of energy. To clarify how, I pay particular attention to a metaphor Downey creates likening his desire to connect with others through video to the literal attraction of electrons that illuminate the video screen. This metaphor operates on the image of entities being moved by energetic forces in the creation of something aesthetically significant. I believe this image can be taken as an icon for Downey’s aesthetics of energy more broadly. Even though video appears as the primary concern of “The Smell of Turpentine,” I claim the artist is also saying something about video’s principal energy: its capacity to create unseen connections and generate literally magnetic attractions between all sorts of different entities and ideas. To ground this claim, I revisit briefly the place of electromagnetism in Downey’s earlier practice. Later in the section, I tie this point about energy and unseen attractions back to Downey’s repeated claims about the critical relation between art and the

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<sup>1</sup> The essay’s first publication came in *Juan Downey: VIDEO PORQUE Te Ve* (Santiago de Chile: Ediciones Visuala Galería, 1985). This initial version was translated into English and republished as Juan Downey, “The Smell of Turpentine,” in *Juan Downey: 1940-1993*, eds. Julieta González and Javier Rivero Ramos, 431-32 (Mexico City: Ediciones MP, 2019). There are some important differences I will identify between this English version and the version published as Juan Downey, “The Smell of Turpentine,” Doug Hall and Sally Jo Fifer, eds., 343-47 (New York and San Francisco: The Aperture Foundation and Bay Area Video Coalition, 1990).

unknown, insisting that electromagnetism was one of his preferred resources in exploring that relation. I look to the history of physics and recent philosophical thought to ground his intuition. At base, this section attempts to reaffirm—even at this advanced stage—the critical role electromagnetism played in Downey’s vision of art.

“The Smell of Turpentine” shows Downey’s more poetic side. He opens the essay with something he might have read or dreamt, but does not remember which. “I do not recall,” Downey tells us, “whether I read or dreamt that Marcel Duchamp had said that artists continue painting because they are addicted to the smell of turpentine. Their activity is therefore not aesthetic, but is instead a biological dependency of the chemistry of the medium.”<sup>2</sup> Marcel Duchamp did in fact say something along these lines in a 1952 *Life* interview with Winthrop Sergeant.<sup>3</sup> Nevertheless, Downey’s uncertainty as to whether this was read or dreamt provokes an initial and alluring ambiguity that sets the tone for the rest of the essay.

Within these first few lines, Downey—vicariously through Duchamp—displaces artistic activity from aesthetic concerns grounded in the forms, contents, or affordances of a particular medium (painting in this case), and relocates it within a “biological dependency of the chemistry of the medium.” Downey is framing the artist’s attachment to painting as less a function of what can be aesthetically achieved through it, and more as a literally intoxicating side-effect of its materiality—an “addiction” to the substances and matter involved in the act of making.

Turpentine is especially evocative of this as it is said that prolonged exposure to the chemical can produce a high. This idea effectively removes the will of authorial intent in relation to a medium

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<sup>2</sup> Downey, “The Smell of Turpentine,” 343.

<sup>3</sup> Here is what Duchamp actually said: “I was never passionate about painting. I never had the olfactory sensation of most artists. They paint because they love the smell of turpentine.” The statement comes in the context of Duchamp expressing his lack of interest in painting and his fear of becoming a “professional painter,” noting “[t]he minute you become that, you are lost.” Winthrop Sergeant, “Dada’s Daddy,” *Life*, April 28, 1952, 110.

and supplants it with an almost uncontrollable allure towards a medium's physical interactions. The significance Downey thus bestows on the captivating power of a medium's materiality is crucial in what follows.

The essay continues after a heading titled "Smell of Turpentine" with the following image: "Wall to wall air conditioning, the hum of decks at high speed rewinding, dim lights, corporate paradise, the electrons shot to flash against the phosphorescent screen..." No doubt, Downey is describing what it is like to be inside a high-tech video editing studio, just like those he spent countless hours in since adopting the medium in the early-70s. "That is my turpentine!" Downey exclaims, going on to say:

The need of video emerges like the dependence on turpentine, from an urging desire of connectiveness. Like the burning electron's desire inside the vacuum tube sparking from the darkness within toward the exterior eye. And all that is in fact communicated is this desire for connectiveness: a deferred communication. A difference of potential, after all, generates the electron flow.<sup>4</sup>

It is within this passage where Downey metaphorizes his attraction to the video medium in energetic terms. To be clear, the source of this attraction is "an urging desire of connectiveness," but that desire is related back to "the dependence on turpentine." This indicates there is something captivating about the materiality of the video medium at play here. Downey makes this clear by describing his desire through the electromagnetic activity inside the video apparatus. Downey felt something especially evocative in the image of the electron streaming towards the photosensitive screen, being pulled by unseen energetic force in the making of art.

This passage Downey keys us into two interrelated points that are crucial for this section. The first being rather technical, though still important: the video medium is uniquely electromagnetic. This point has been dealt with throughout this dissertation, though still bears

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<sup>4</sup> Downey, "The Smell of Turpentine," in *Illuminating Video*, 343.



repeating at this late stage. Video is an audiovisual medium powered by an always-live flow of electromagnetic signals, and is—in its first, analog iteration—more like radio or radar than the stable, photochemical imprinting of photography and film.<sup>5</sup> Thus, there is a technical compatibility at work in Downey’s metaphor: Downey’s attraction to video and the attraction of electrons inside video itself evoke one another. In both attractions, there are unseen and energetic forces at work with figurative and literal magnetic effect.

The second point this metaphor keys us into is more complex than the first, but builds atop it. In making the energetic interactions of video his “smell of turpentine,” that is, the materiality by which he is captivated, I suggest Downey is saying something about more than just video as a medium. He is saying something about the radiant electromagnetic energy that activates it. Put another way, the technical connection between video and electromagnetism is not enough on its own to exhaust the full significance of the metaphor in relation to Downey’s practice. I believe that in rendering his desire for connectiveness in the form of the electron—which happens to be channeled uniquely well though not exclusively by video—Downey is yet again making its energy integral to his vision of art. After all, that electron is being swayed by unseen forces, caught up within a magnetic attraction that—in some deep, quantum sense—resists easy explanation though resolves itself as aesthetic (or, at least, as part of an image). I believe this scene captures Downey’s aesthetics of energy exceptionally well. Thus, for the remainder of the section, I want reaffirm the relations between Downey’s interest in electromagnetism, its place in his practice over time, and finally, its link to his belief in the connection between art and the unknown.

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<sup>5</sup> I owe this vision of video to the media archaeological analyses of it during its analog iteration. For more, see: Ina Blom, *The Autobiography of Video: The Life and Times of a Memory Technology* (Berlin: Sternberg Press, 2016) and Yvonne Spielmann, *Video: The Reflexive Medium* (Cambridge: MIT Press, 2008).

As I have argued throughout this dissertation, one thing that makes Downey's practice unique is his interest in electromagnetism in excess of its animating presence within new media technology. The radiant energy of electromagnetism is not, for the artist, only a basic power source that flips on a screen or causes a sensor to activate. He once regarded it as that "radiant nature" which "accounts for the life itself of the universe we inhabit."<sup>6</sup> And while this points to a kind of cosmological significance held by the energy for Downey, he still felt its presence in more grounded elements of lived experience.

First of all, we are familiar with Downey's concept of invisible architecture—first developed in 1973. It is something the artist describes as "an art of the Invisible Spectrum of Electromagnetic Energy and Live Biological Elements," which married his interests in architecture with the unseen yet environmental presence of electromagnetism and our interactions with it.<sup>7</sup> Much of Downey's performance and installation practice from the early 1970s could be read within the purview of invisible architecture, and I attempted to show this in chapter three. In the work *Plato Now* (1973), what I claimed was a construction of invisible architecture, electromagnetic energies allowed the different elements of the performance to interact outside the bounds of normal perception. Video was no doubt a pivotal node in those energetic interactions, but so were human brainwaves and shadows—the commonality between all three being, in Downey's eyes, their electromagnetic nature.

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<sup>6</sup> Juan Downey, "Architecture, Video, Telepathy: A Communications Utopia," originally published in *Journal of the Center for Advanced TV Studies* 5, no. 1 (1977), reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 343.

<sup>7</sup> Quoted from a letter from Downey to Gyorgy Kepes regarding Downey's fellowship at the Center for Advanced Visual Study, MIT, dated November 4, 1972. Reprinted in *Juan Downey, 1940-1993*, 347. For more on Downey's own writings concerning invisible architecture, see: Juan Downey, "Invisible Architecture," *On Site: Not Seen And/Or Less Seen Of*, no. 4 (1973); reprinted in *Juan Downey, 1940-1993*, 331-32 (Mexico City: Ediciones MP, 2019).

In the later-1970s, Downey expands on the role electromagnetism might play in art and human life in the text “Architecture, Video, Telepathy: A Communications Utopia” (1977). The text concerns a wide range of topics, some of which demonstrate clearly his interest in cybernetic theories of communication. It is here he insists that cybernetics itself is a “call for social change: a revolution within the detection, processing, and dispersal of information.”<sup>8</sup> Elsewhere in the text, Downey turns to electromagnetism and does so in a vividly speculative fashion. He claims: “The antidote for wars, repression, colonialism, racism and other atrocities that humanity inflicts upon itself is a new being with a reshaped intelligence resulting from electromagnetic collectiveness made possible today by magnetic-energy technology of decreasing physical appearance,” allowing us to “conceive of telepathy, teleportation, and even tele-eroticism: libidos acting a distance, a collective tantric sex, a fusion of lights.”<sup>9</sup> It is clear that Downey believed his contemporary media technical milieu—itsself composed of “magnetic-energy technology of decreasing physical appearance”—would play a role in harnessing the transformative power of electromagnetism.<sup>10</sup> However, I want to suggest there is a tension between the rationalizing logic of cybernetic systems of communication and the speculative lean of Downey’s interest in electromagnetic energies. His focus on telepathy speaks to this tension particularly: it traffics in the language of invisible signals, but also partakes in a kind of mysticism and otherworldliness that is harder to configure within the cybernetic worldview of command and control.<sup>11</sup>

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<sup>8</sup> Downey, “Architecture, Video, Telepathy,” 342.

<sup>9</sup> Ibid. 341, 343.

<sup>10</sup> Julieta González essentially argues this very point when she claims that the miniaturization of technology heralded by the information age was largely responsible for Downey’s turn towards the “invisible” or “micro” within his concept of invisible architecture and its electromagnetic dimensions. I discuss this argument in chapter three. For more, see: Julieta González, “From Utopia to Abdication: Juan Downey’s Architecture without Architecture,” in *Juan Downey: The Invisible Architect*, exh. cat., ed. Valérie Smith, 59-74 (Cambridge and New York: MIT List Visual Arts Center and Bronx Museum of the Arts, 2011).

<sup>11</sup> Though, to be clear, there were elements within the American counterculture that embraced new media technologies with a techno-utopian optimism, and Downey could be counted amongst them. Video art forerunner Nam June Paik work is a point in case as well. For more on the links between the historical milieu of the information

This tension seems to reach a breaking point when Downey makes his way into the Venezuelan Amazon and finds a compatibility between his cosmological rendering of electromagnetism and the radiant energies of Yanomami spirituality. The previous chapter explored the significance of light, luminosity, and reflective surfaces within the Yanomami worldview, far and away from any media technical manifestations.<sup>12</sup> Rather, for the Yanomami, the forest itself was an ecology of material and spiritual energies that were inclusive of yet also beyond the electromagnetic realm. It is true that video played a crucial role in Downey's attempts to visualize such energies, but we also saw him turning to drawing to try and bring these energies into the perceptible domain (something we will return to in the next section).<sup>13</sup> I make this point to insist on the enduring presence of the radiant energies of electromagnetism within Downey's practice and across its different media.

That is all to say, returning to "The Smell of Turpentine," when Downey describes his attachment to the video medium in energetic terms—an attraction rendered as the pull of electrons within the vacuum tube towards the phosphorous screen—I believe the metaphor operates on more than a purely technical connection between the medium and electromagnetism. Downey himself wonders what it is about video that suited his practice so well: "Why through that specific manner of arranging electrons on a magnetic coating over a moving plastic ribbon—

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age and the countercultural tropes, such as mysticism and the New Age Occult, see: Fred Turner, *The Democratic Surround: Multimedia and American Liberalism from World War II to the Psychedelic Sixties* (Chicago: University of Chicago Press, 2013).

<sup>12</sup> Here I have in mind Davi Kopenawa's explanations of the brilliance and luminosity of *Xapiri* spirits, as well as Brazilian anthropologist Eduardo Viveiros de Castro's analysis of light and illumination in Indigenous Amazonian cosmology. For more, see Davi Kopenawa and Bruce Albert, *The Falling Sky: Words of a Yanomami Shaman*, trans. Nicholas Elliot and Allison Dundy (Cambridge: Harvard University Press, 2013); and Eduardo Viveiros de Castro, "The Crystal Forest: Notes on the Ontology of Amazonian Spirits," *Inner Asia* 9, no. 2, Special Issue: Perspectivism (2007): 153-72.

<sup>13</sup> See Downey's *Meditation* series, 1976-1977. These works, discussed briefly in chapter four, consisted largely in depictions of concentric rings spiraling inwards to a central void and can be read in relation to Downey's experiences with Yanomami shamanic practice. Later in this chapter, we will see Downey once again turning towards drawing to figure those energies with which his aesthetics was concerned.

why through video—was my vision more readily communicated?”<sup>14</sup> At this juncture, one could reasonably respond that it was in fact something about video itself: its status as an iconic information technology, its connection to televisual culture, its embodiment of feedback principles. Any and all of these might be reasons why Downey made video so integral to his practice.

Or, keeping in mind Downey’s career-long investment in other media, could it be something about the energy that activated video? Which is to say, while Downey is predominantly discussing video in “The Smell of Turpentine,” perhaps video is standing in as metonym for the artistic harnessing of electromagnetic energy. This is the answer I want to offer. In rendering his “desire for connectiveness” as an entirely energetic phenomenon, I believe Downey is gesturing towards the guiding influence electromagnetism had on this practice no matter the media. I believe it is something about the energy that appeared to him as exceptionally well-suited to describe his relation to art making.

And what might that something be? I suggest it is the energy’s capacity to create magnetic attractions between different entities while doing so invisibly, which is to say, in ways that can appear ambiguous or unexpected. This point is better understood if we keep in mind another feature of Downey’s aesthetics of energy that has been critical to this dissertation: his continued insistence on the connection between art and the unknown. Later in “Architecture, Video, Telepathy,” Downey tells us that “[t]he aesthetic experience places us face to face with mystery in the process of resolution. It is the nature of art to bring us to grips with the yet undefined.”<sup>15</sup> Four years earlier, in the travelogues of *Video Trans America*, he describes aesthetic experience as “nothing but enjoying the unthinkable,” and that “[c]onfrontation with

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<sup>14</sup> Downey, “The Smell of Turpentine,” in *Illuminating Video*, 345.

<sup>15</sup> Downey, “Architecture, Video, Telepathy,” 344.

the unknown is the only valuable quest.”<sup>16</sup> Previously, in the second chapter, I argued that the electronic sculptures found their critical force by introducing an element of the unknown to their information age milieu by foregrounding the elusiveness of electromagnetic energy. I made a similar claim in chapter three, in relation to electromagnetism’s role as the media of the unseen and speculative connections between *Plato Now*’s different elements.

These are just two examples, but throughout this dissertation I have insisted that Downey regarded electromagnetic energy as especially well-suited to catalyzing those sorts of confounding art encounters so emblematic of his practice. At base, I wager Downey was drawn to electromagnetism because of its capacity for attraction and connection, and especially because it attracts and connects in oftentimes ambiguous ways; it can be thought as the media of unseen connections which helps sensitize us to relations, entities, and insights outside our normal capacity of perception and understanding. After all, Downey wanted to liberate “art from the parameters of the Visible Spectrum”—a call that can be understood as aesthetically seeking out those electromagnetic elements that often evade perception but are no less present or effectual.<sup>17</sup>

Even the history of electromagnetic physics bears Downey’s intuition out to some extent. Electromagnetic interactions were first formalized by James Clerk Maxwell “without assuming the existence of forces capable of acting directly at sensible distances.”<sup>18</sup> Which is to say, the first tried and true theory of electromagnetism took into account the empirical fact that electric and magnetic interactions seemed to take place below the threshold of visibility—especially in comparison to Newtonian causality. While this was initially a perceptual ambiguity rather than

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<sup>16</sup> Juan Downey, “Travelogues of Video Trans Americas,” in *Juan Downey: 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 324, 327.

<sup>17</sup> Juan Downey, “Invisible Architecture,” *On Site: Not Seen And/Or Less Seen of*, no. 4 (1973); reprinted in *Juan Downey: 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 332.

<sup>18</sup> James Clerk Maxwell, “A Dynamical Theory of the Electromagnetic Field,” *Philosophical Transactions of the Royal Society of London* 155 (1865): 460.

an epistemological one, under the reign of quantum mechanics, electromagnetic interaction became epistemologically confounding as well. Take for instance the wave-particle duality on the one hand, and the issue of action at a distance—or quantum nonlocality—on the other. An element of the electromagnetic field can not only express itself as a particle *and* wave under different experimental conditions, but it can also affect another element of the field instantaneously across space-time. While Albert Einstein described nonlocality as “spooky,” and believed it was fundamentally disruptive to the established laws of reality, it has since been experimentally confirmed.<sup>19</sup> Nonlocality, or action at a distance, is perhaps one of the most significant and literal demonstrations of electromagnetism’s capacity for strange connections.

Ecological philosopher Timothy Morton thinks non-locality, aesthetics, and electromagnetism in a way Downey himself might have done. To be affected by a work of art, Morton argues, is to experience action at a distance and, interestingly enough,

in Plato’s time they used to call action at a distance *demonic*. It was the action of demonic forces that mediated between the physical and nonphysical realms of existence. This is what Socrates says about art in the *Ion*: he compares art to a magnet in a string of magnets, from the Muse, goddess of inspiration, to the artist, to the work, to the performer, to the audience, all magnets linked by some demonic force. We call this demonic force electromagnetism, but its remarkably similar to Plato’s insight...

insofar as electromagnetic interactions have been shown to demonstrate the same nonlocality Morton, and Socrates via Plato, finds aesthetic experience especially evocative of.<sup>20</sup> That “string

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<sup>19</sup> I will provide a sample of articles detailing experimental proof of nonlocality sourced from the Wikipedia page on quantum nonlocality (which is perhaps a better resource on the topic for non-experts, including myself. Marissa Giustina, et al, "Significant-loophole-free test of Bell's theorem with entangled photons," *Physical Review Letters* 115, no. 25 (December 2015): 250401; Lucien Hardy, “Nonlocality for two particles without inequalities for almost all entangled states.” *Physical Review Letters* 71, no. 11 (1993): 1665-68; Thomas Jennewein, Gregor Weihs, Jian-Wei Pan, and Anton Zeilinger, “Experimental Nonlocality Proof of Quantum Teleportation and Entanglement Swapping.” *Physical Review Letters* 88, no. 1 (December 2001): 017903.

<sup>20</sup> Timothy Morton, *Realist Magic: Objects, Ontology, Causality* (Ann Arbor: Open Humanities Press, 2013), 21-22. The idea that aesthetic experience and quantum nonlocality can be thought together is a point Morton also touches on in his *Humankind: Solidarity with Nonhuman People* (London: Verso Books, 2015). It is there he describes the aesthetic experience as a “a love letter from an unknown source, a nonlocal *telepathic* mind-meld with something that might not be conscious, might not be sentient, might not be alive, might not even exist... a not-me experience arising in my inner space that bears the trace of a specter” 66. I delve into this idea in the third chapter when

of magnets” arrayed between the artwork, artist, and audience evokes a series of elements drawn to one another by a strange force that cannot not be immediately seen, resists easy explanation, and yet can profoundly affect us.

That aesthetics and electromagnetism share this capacity for generating strange, alluring, yet unseeable and perhaps inexplicable attractions is something I claim Downey knew well and gestures towards in “The Smell of Turpentine.” Downey metaphorizes his relationship to video through the electron’s “burning desire” to make contact with the photosensitive screen in the creation of the image. Such a scene constellates energetic forces, magnetic attractions, and aesthetics in a way uniquely readable within Downey’s practice even beyond his work in video. Therefore, I suggest reading “The Smell of Turpentine” as not just a text about Downey’s interest in video, but a text about the energy that video channels, the energy that has been a critical component of the artist’s practice since its very early days. As late as 1990, Downey is framing his practice with recourse to the radiant energies of electromagnetism and I want the reader to keep this in mind (especially since we will soon encounter works by the artist that might at first seem to have little relation to energetic forces and processes).

The question now becomes: in what ways does this framing materialize in the visual record of his art? Put another way, if my argument above is onto something—that even at this later stage Downey is thinking of his practice through the prism of radiant energies—how might we be able to detect that in a concrete way in his art? To answer this question, I want to look in an unlikely place. Not Downey’s videos—like *The Looking Glass* (1981) or *Shifters* (1984), which are some of his most well-known works from the 1980s—but his drawings instead. In

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discussing Downey’s interest in telepathy. Morton also talks about the “demonic” quality of aesthetics in *Dark Ecology: For a Logic of Future Coexistence* (New York: Columbia University Press, 2016), 95. Again, a relation between aesthetics and forces acting at a distance is developed.



terms of media, if there is one constant in Downey's practice, it would have to be drawing. From the very early 1960s until his passing in 1993, Downey continued to draw. I now want to give some of those less remarked upon works their due attention and explore whether or not Downey's interest in the radiant energies of electromagnetism shines through even on paper. This is what the next section seeks to do.

### Swirls of Lines, Lines of Force

Turning to Downey's drawings at this point is also a strategic move made in the hopes of articulating the presence of his aesthetics of energy even in unlikely places. There is a sense in which all of Downey's work with video, either for the single screen or in installation, meet a minimal criterion of the aesthetics of energy. At base, the video image is electromagnetic through and through, a literal making art with electromagnetism, and I suggest this is one critical reason he turned towards video so enthusiastically. Nonetheless, I do think the presence of Downey's aesthetics of energy is strong enough to materialize (or energize?) within media that might at first have little obvious relation to energetic processes or forces. I claim his drawings of the 1980s are convincing examples of this. Thus, the objective of this section is articulate how Downey's drawings from this period partake in and contribute to his aesthetics of energy.

More specifically, I want to focus on a repeated motif within these drawings: a striation technique composed of incredibly fine lines that often swirl towards the center of the image and define its figures. This untitled drawing from 1980 is just one of many examples of the graphic technique [fig. 1], and all of the drawings to be discussed below are composed in some way with it. Here, bodies are drawn less with rigid outlines and more as differentially shaded gradations, and negative spaces, of the larger swirl that composes the pictorial field. In those drawings of

Downey's that contain color, forms arise from the swirl as differently colored striations similarly embedded in an overall spiral effect. In all of the drawings soon to be examined, hard edges are dissolved in a constant and delicately precise flow of lines that appear to diagram or visualize the radiant energies of the image. That is, this spiral striation motif can be best described as the rendering of a forcefield from which figures, scenes, and spaces emerge. It is the graphic embodiment of the electromagnetic orientation I claim Downey brings to his Baroque subject matter, and its innovativeness lies in the juxtaposition of seventeenth century imagery, the traditional medium of drawing, and an energetic sensibility more immediately legible within the realm of new media art.<sup>21</sup> The works on paper to be discussed below stand as contributions to his aesthetics of energy by managing to hold these seemingly disparate elements tightly together.

I predicate the striation motif's connection to radiant energies and forcefields on three critical points. The first and most immediate: Downey's *Meditaciones* series (1976-1977), in which he used the spiraling of lines to try and picture an inner "white light" he sensed during his time in the Amazon rainforest. The second, that the striation technique bears a strong resemblance to some of the very first visual representations of the electromagnetic field—or, as it was then called, "magnetic lines of force"—created by Michael Faraday in the mid-nineteenth century. And third, that lines have traditionally been used throughout the history of art to represent rays of light, stretching back hundreds of years across painting and all manner of

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<sup>21</sup> By claiming that Downey's energetic sensibility is more immediately legible within the realm of new media art I mean to identify the familiarity new media artists had with electronic technologies, and their enthusiasm for collaboration with scientists and engineers. The collective E.A.T (Experiments in Art and Technology) is a well-known example of this collaborative ethos. Art historian Edward Shanken's characterization of new media art as "art-and-technology" also points to this kind familiarity, though electronics specifically and its principal energy are implicit in his description: "Art-and-technology has focused its inquiry on the materials and/or concepts of technology and science, which it recognizes artists have historically incorporated in their work. Its investigations include: (1) the aesthetic examination of the visual forms of science and technology, (2) the application of science and technology in order to create visual forms and (3) the use of scientific concepts and technological media both to question their prescribed applications and to create new aesthetic models." Edward Shanken, "Art in the Information Age: Technology and Conceptual Art," *Leonardo* 35, no. 4 (2002): 434.

graphic media. Before concretely detailing Downey's use of the spiral striation motif and its place in his practice during the 1980s, I want to situate it within these three contexts of the visualization of radiant energies. It is through these three contexts that the electromagnetic orientation of Downey's drawings initially takes shape.

The *Meditaciones* series can be understood as the site where Downey both technically honed this spiral striation motif and grounded its connection to radiant energies. It is a complex set of drawings—mentioned in the previous chapter—that he completed during his time in Southern Venezuela and while he lived amongst the Yanomami. We first hear mention of it in a voiceover during *Guahibos* (1976), when Downey tells the viewer: “I have been sensing in my mind a spiral growth. In the middle of the jungle, I have been drawing one spiral per day.”<sup>22</sup> A year later Downey would elaborate in “Drawing with the Yanomami” about his perceptual experiences with that spiral growth, and the form it took as a white light. Paradoxically he writes: “There is something specific and complete in that white, it ends at a limit that is in itself another field of white... Everyday I want to decipher that white,” which is visualized as “a rounded edge of something luminous that is never complete. (A geometrical representation of this light is a circle or sphere, yet it evinces a concentric behavior, hence the spiral).”<sup>23</sup> Both complete and incomplete, the spiral itself is a definite form that alludes to ongoingness. And the *Meditaciones* series is very much in the vein of this, numerous iterations on the spiral completed with lines that are alternately intensely fine and dense, or languid and spacious, all typically making their way to a void in the center of the page, some with titles that explicitly evoke luminosity and energy

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<sup>22</sup> Opening voiceover from *Guahibos* (1976).

<sup>23</sup> Juan Downey, “Drawing with the Yanomami,” published in conjunction with the exhibition *Juan Downey: Dibujando con los Yanomami*, Galería Alder Castillo, Caracas, Venezuela, 1977, reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 339.

[fig. 2].<sup>24</sup> These drawings are certainly more abstract than that above or those to be examined below, but their basic conceit evinces a relation Downey felt between the spiraling of lines and the depiction of radiant energies. This is the first connection I want to insist on between the spiral motif and energetic visualization.

The second connection is more temporally distant but quite striking in its visual similarity and thematic resonance. Here I am talking about the first graphic depictions of the electromagnetic field made by Michael Faraday during the mid-nineteenth century, which are also composed of thin, curving lines. Here is an image of iron filings embedded in wax on paper [fig.3]. Faraday took two bar magnets, placed horizontally next to one another with some space in between, and covered them with a sheet of paper. The paper had a thin layer of wax atop it. Faraday then sprinkled the sheet with iron filings. These filings—being especially susceptible to magnetism—are densest near the edges of the magnets and reveal their rectangular shape. But, outward from these edges, the filings are arrayed in thin, fragmentary, and gently curving lines. Faraday heated the wax of this paper to preserve the index of these lines and thus brought into the visual field evidence for what he had been calling “magnetic lines of force.”<sup>25</sup> His own graphic rendition of these lines—printed in his *Experimental Researches in Electricity*—is even closer to Downey’s striations, but follows the same basic form [fig. 4].

These lines of force can be thought as a genealogical precursor to the concept of the electromagnetic field.<sup>26</sup> Before 1852, Faraday had experimental proof confirming that “that

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<sup>24</sup> Such as, *A Light*, and *Perfil de Energia* (Energy Profile). Another is titled *Cosmologia* (Cosmology), which is difficult to not read in energetic terms given Downey’s stated beliefs in the energetic constitution of the universe.

<sup>25</sup> For a brief and accessible history of this experiment, see: “Michael Faraday’s iron filings,” The Royal Institution, accessed September 20, 2021, <https://www.rigb.org/our-history/iconic-objects/iconic-objects-list/faradays-iron-filings>. The first published mention of Faraday’s lines of force appears in Michael Faraday, “Experimental Researches in Electricity,” *Philosophical Transactions of the Royal Society of London* 122 (1832): 154.

<sup>26</sup> There is some debate as to who originated the concept of the field in relation to electromagnetic physics. While James Clerk Maxwell was the first to mathematically formalize the electromagnetic field, its experimental foundations are less clear. Historian of science David Gooding argues that Faraday’s laboratory work with magnetic

electricity, magnetism, light, and matter are connected” and he believed the media of their connection were these lines of force.<sup>27</sup> “In his vision,” write Faraday’s biographers Nancy Forbes and Basil Mahon,

the universe was crisscrossed by lines of force—electric, magnetic, and possibly other kinds. The points where these lines met were the points at which we *perceive* matter to exist; his ‘atoms’ were merely the centers of force that extended through all space. When disturbed, the lines of force vibrated laterally and sent waves of energy along their lengths, like waves along a rope, at a rapid but finite speed. Light, he suggested, was probably one manifestation of these vibrations.<sup>28</sup>

In thinking matter and energy as intimately connected and differentially expressed by the density of centers of force and the frequencies of vibrations, Faraday imagined an eerily close model to what would eventually become the electromagnetic field.<sup>29</sup> I lay emphasis on his notion of lines of force for two reasons: 1) it has a clear, historical connection to the diagramming of invisible radiant energies; and 2) as literal “lines” preserved on paper, this diagramming is inseparable from the graphic medium. I suggest Downey’s drawings too are composed of lines of force, and it is literally from these lines that his images emerge—as if his figures and scenes are temporary condensations of an energetic flux.

The third contextual point I want to connect is the use of lines throughout the history of art to represent the invisible presence of light, on paper or in etching, engraving, and

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lines was pushing him in the direction of what would become the field concept, and his correspondences with William Thompson (later, Lord Kelvin) gave certain theoretical terminological support to this. For more on this history, see David Gooding, “Faraday, Thompson, and the Concept of the Magnetic Field,” *The British Journal for the History of Science* 13, no. 2 (July 1980): 91-120.

<sup>27</sup> David Gooding, “Final Steps to the Field Theory: Faraday’s Study of Magnetic Phenomena, 1845-1850,” *Historical Studies in the Physical Sciences* 11, no. 2 (1981): 234.

<sup>28</sup> Nancy Forbes and Basil Mahon, *Faraday, Maxwell, and the Electromagnetic Field: How Two Men Revolutionized Physics* (Amherst, NY: Prometheus Books, 2019), 102. For more on Faraday’s thoughts about the lines of force and their relation to light especially, see Michael Faraday, “Thoughts on Ray Vibrations: A Letter to Richard Phillips,” NASA, <https://www-spf.gsfc.nasa.gov/Education/wfarad1846.html>.

<sup>29</sup> Though, at the time, the ether was largely presupposed to be the mechanical medium in which light and energies traveled. For more on this history, see: Bruce J. Hunt, “Lines of Force, Swirls of Ether,” in *From Energy to Information: Representation in Science and Technology, Art, and Literature*, ed. Bruce Clark and Linda Dalrymple Henderson, 99-113 (Stanford: Stanford University Press, 2002).

printmaking. This is something Downey himself would have been intimately familiar with, having studied etching with Stanley William Hayter at Atelier 17 in Paris during the early-1960s.<sup>30</sup> A kind of art historical correlate to Faraday's lines of force, then, could perhaps be the "ray," the straight lines used to graphically depict light since the Renaissance. Media studies scholar Sean Cubitt offers a history of technical media organized around the representation and harnessing of light in *The Practice of Light: A Genealogy of Visual Technologies from Prints to Pixels* (2014); and articulates this link between line and light from Albrecht Dürer to Mickey Mouse.<sup>31</sup> Importantly, the visual strategy of using straight lines to denote the invisible presence of light emerged out of a Renaissance context in which the line was strictly geometricized, and light itself was thought to travel only on a fixed path. This "discipline" of the line, as Cubitt calls it, differs dramatically from the swirling, fine-grained striations of Downey's drawings, which are closer in Cubitt's analysis to the "autonomy of the line" evinced by the wild drawings of Hogarth, where the line was used to celebrate natural movement rather than fix it in place.<sup>32</sup>

But Downey's lines are not so much denoting the movement of figures (his figures are almost all still) as much as they are providing a swirling ground from which his figures emerge. In that sense, the graphic visualization of light is only one element of a fuller energetic field Downey attempts to picture. That is why I wanted to include Faraday's lines of force alongside Downey's meditations on the spiraling white light and the longer art history of light rays. There

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<sup>30</sup> Valerie Smith, "Juan Downey: The Invisible Architect," in *Juan Downey: The Invisible Architect*, exh. cat., ed. Valerie Smith (Cambridge and New York: MIT List Visual Arts Center and Bronx Museum of the Arts, 2011), 21.

<sup>31</sup> More specifically, Cubitt regards the history of line as "a dialectic of discipline and autonomy," wherein it was either—in the case of Dürer, or Descartes after him—strictly geometricized and made to infrastructural to perception, or—in the case of the later Hogarth—was used to trace natural movement in the act and untethered from the fixity of Euclidean space. He then explores the tension of this dialectic in animation and digital imaging. Sean Cubitt, *The Practice of Light: A Genealogy of Visual Technologies from Prints to Pixels* (Cambridge: MIT Press, 2014), 45-79.

<sup>32</sup> This play between discipline and autonomy is what Cubitt refers to as the dialectic of the line. See the footnote above and *Ibid.* 70-74.

is an energetic fullness to these works on paper that requires a more expanded sense of energy beyond the visible—or rather, technically speaking, that regards visible light as just one element of a more encompassing form of energy inclusive of invisible elements as well. Thus, it is within this multi-layered context of graphically visualizing an array of electromagnetic energies I want to Downey’s spiral striation motif to be read. The points above can be thought as the coordinates within which the drawing’s electromagnetic orientation emerges.

As we approach these works on paper, it should be noted that they are thematically inseparable from Downey’s installations and videos of the period. It was during this time—upon his return from South America in the late-1970s and into the 1980s—he shifts his interest towards the Western-European Baroque conventions of representation, visuality, illusionism, and history (another art historical connection). This thematic axis was explored across the wide media repertoire of Downey’s practice. For instance, the first work to be explored below was actually a preparatory drawing for a single-channel video installation titled *Venus and Her Mirror* (1979)—based on Diego Velázquez’ *Rokeby Venus* (c. 1651)—elements of which made their way into Downey’s *The Looking Glass* (1981), a quasi-documentary exploration of the power of mirrors in art and architecture. *The Looking Glass* also features footage and voiceovers from an earlier tape titled *Las Meninas* (1975)—a dream-like meditation on another of Velázquez’ famous paintings—whose impetus began with a performance titled *Representations* (1974). Velázquez’ *Las Meninas* was also the source of inspiration for numerous other drawings Downey completed during the 1980s—some of which we will discuss later on.

This is all to suggest that Downey was exploring Baroque visuality across media. It is not as if focusing intently on the drawings here (rather than the videos or installations) is somehow

making a major thematic omission.<sup>33</sup> The media are no doubt distinct, but their contents are all deeply related. And as much as video captures these contents through the affordances of its electromagnetic medium, the drawings attempt in their own way to display their contents with a sensitivity to an underlying energetic reality. We can now explore how.

An untitled drawing from 1979 is our point of entry [fig. 5]. As mentioned above, it was a preparatory drawing for what would soon become the single-channel video installation *Venus and Her Mirror* from the same year [fig. 5a]. That installation featured an altered reproduction of Velázquez' *Rokeby Venus* where, instead of the original's mirror, Downey inserted a video monitor. It displayed a nude model in the same pose watching herself in a feedback loop. And while the drawing does include precise measurements for the dimensions of that installation—down to the quarter of an inch—these technical specifics are superimposed over seven differently sized depictions of the Venus herself. Five have their back towards the viewer but two are front facing, and all of them are superimposed over top one another.

This drawing emerges at the intersection of Downey's interest in video, installation, Renaissance painting, and his own, highly technical, diagrammatic style of drawing. It is the formal specifics of that last interest I want to focus on now. All of the nude figures are depicted as differently colored or shaded gradations of a remarkably fine series of swirling lines terminating at the center of the image. The density of those lines varies at different points in the swirl, sometimes they are continuous and thin, other times they are thicker and dotted. Many are a faint ochre color, though blues appear throughout. The lines' variations in form and color are

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<sup>33</sup> And it is certainly true that Downey's work with video has been afforded more art historical attention than his work in other media. Indeed, Downey is largely regarded as a *video* artist more than anything else. I am grateful to my conversations with Downey scholar Javier Rivero Ramos for kindly reminding me that, even if Downey's videos are what gets talked about the most, he was committed to a multimedia practice. Concluding my dissertation with an analysis of Downey's drawings, rather than his videos, is an implicit recognition of this multimedia fact.



what compose the nude figures themselves, as the only hard edges to the drawing are those that outline the physical dimensions of installation. Every other form is evoked by the interplay of different colors and densities in the striation of swirling lines. And it is this striation motif that reappears in so many of Downey's drawings from 1979 onwards.

1980's *Mirror/Venus* (fig. 6) is another adaptation of the *Rokeby Venus*, though it is not fused with the preparatory sketch of an installation, as in the previous example. It feels less busy than the earlier untitled drawing, though it shares some key elements. There are multiple nudes, but this time all with their back facing the viewer, and of course, the fine-lined swirl organizes the pictorial field and defines its figures. This swirl terminates just left of the page's center around the mirror held up by a cherub—a clear invocation of the Velázquez original. This mirror, however, shows no figural reflection. Rather it displays what could be interpreted as a vertically-oriented rainbow, or perhaps the “test card” that would be shown when a television's transmission channel is open but no broadcasts are being aired. Test cards, composed of vertical strips of different colors, were used to calibrate video cameras [fig. 7]. This televisual reference would surely not be lost on Downey, who replaced the *Rokeby Venus*'s original mirror in his installation with a TV monitor.

And while the televisual connection here is strong, I want to suggest that this mirror can also be read in relation to an earlier drawing of the artist's completed in 1975: *Colors Organized According to its Electromagnetic Frequency* [fig. 8]. This work is exactly as it sounds, demonstrating the care and precision Downey took to represent electromagnetic energy on paper. Composed of thin horizontal strips of colors spanning the visible spectrum, the right side of the drawing indicates the frequency of each in cycles per second. The ultra-violet and infra-red ends of the color spectrum bear the word “INVISIBLE.” At those regions, Downey added a liquid to

the sheet such that their colors streak and dilute into nothingness. The mirror in *Mirror/Venus* looks like a miniature version of *Colors Organized* turned on its side and condensed to only a few strips [fig. 6a].

I make this connection between the mirror in *Mirror/Venus* and *Colors Organized* because it effectively transforms that mirror into a conduit of visible electromagnetic energy—a conduit from which the striated swirl emanates and gives form to the image’s figures. It is as if Downey is subordinating the reflective power of the mirror to its capacity for luminosity. That is, Downey is not showing us a figural image in this mirror—there is no reflection in the sense we see when we look into our bathroom mirrors—but is rather foregrounding an easily overlooked fact about mirrors themselves. If a mirror is to reflect anything at all, it requires light to do so. Mirrored reflections are, in the first instance, functions of radiant electromagnetic energy.<sup>34</sup> That *Mirror/Venus*’ striated swirl is radiating outward from a mirror whose only “image” is the shades of visible light gestures to the energetic foundation of reflections. However the Venus might be captured by her reflected beauty, it is a beauty always already made visible by electromagnetic means.

This is not to claim that Downey had no interest in the ways mirrors could produce images nearly indistinguishable from reality, ensnare our attention, confront us with what we believe to be ourselves, and amplify, distort, or decompose space. *The Looking Glass* (1981) is a quasi-documentary video by Downey that explores these topics in depth. It also features

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<sup>34</sup> While the thematic differences between Downey’s work in the 1980s and his previous work on the Amazon tapes appear quite stark, there are points of connection. Earlier I mentioned how Downey’s striated spiral motif was practiced during his time in South America. In this case, the Yanomami held a belief about mirrors that—like we see above—subordinated their reflective power to their capacity for luminosity. Davi Kopenawa explains how *xapiri* spirits would descend into the forest, commune with shamans during their rituals, and dance upon surfaces that look “like glass and shines with a dazzling light... White people would say they are **mirrors**. But they are not mirrors to look at oneself, they are mirrors that shine.” In *Mirror/Venus*, we have a mirror that shines, not one that reflects or in which the Venus could look at herself. This might be yet another point of contact between these two phases of Downey’s practice. Kopenawa and Albert, *The Falling Sky*, 63. Bold in the original.

prominently a discussion of Velázquez' *Las Meninas* (1656) centered around the painting's confounding relation to reflection and vision. Downey produced a video six years earlier sharing the title of the Velázquez painting that does something similar, and served as a partial inspiration for *The Looking Glass*.<sup>35</sup> In that earlier tape, Downey quotes at length portions of Michel Foucault's analysis of *Las Meninas* (1656) from the first chapter of *The Order of Things: An Archaeology of the Human Sciences* (1965). The artist specifically chose passages that refer to the painting's mirror, located on the far wall of the depicted studio and in which one can faintly see the images of King Phillip IV and his wife Mariana of Austria.<sup>36</sup>

Now, Foucault was not the only scholar thinking about *Las Meninas* in the mid-1960s. Art historian Leo Steinberg, while teaching at Vassar College, attempted to deliver a lecture on the painting during a Tuesday evening in the autumn of 1965. That evening was November 9<sup>th</sup>, the same day as the Great Northeastern Power Failure.<sup>37</sup> Once his slide projector faded to black, Steinberg dismissed his class, eventually wrote the lecture up, and sent a copy to each of his students as a present for Christmas. He wondered whether or not he should publish it. He decided he would not when, in the ensuing years, he observed a flurry of essays on the painting—spurred by Foucault's analysis—and thought: “To prolong the procession at its tail end seemed tiresome, like joining a dismally long line at the supermarket; better to move on.”<sup>38</sup> And Steinberg did, for a while. 1980 saw a renewed interest in the painting, and he felt these interpretations were missing something—namely the entirety of the painting itself, as opposed to some single,

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<sup>35</sup> Some images and voiceovers from Downey's *Las Meninas* (1975) were reused in *The Looking Glass* (1981).

<sup>36</sup> Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (London: Routledge Classics, 2002), 8, 15-16. Quoted as voiceover in *Las Meninas* (1975), 4:37, 6:56, 9:58 min.

<sup>37</sup> For more on the blackout, see: Gregory S. Vassell, “The northeast blackout of 1965,” *Public Utilities Fortnightly* 126, no. 8 (1990).

<sup>38</sup> Leo Steinberg, “Velázquez' *Las Meninas*,” *October* 19 (Winter 1981): 45.

symbolically super-charged element.<sup>39</sup> “Whether the picture’s essential meaning is discovered in the cross of the Order of Santiago on the proud painter’s doublet, or in the effect of the mirror on the rear wall,” Steinberg wrote, “a disproportionate acreage of the canvas remains unaccounted for.”<sup>40</sup>

Accounting for more of the painting’s “acreage” is just what the art historian tried to do during that Tuesday evening in 1965, the written form of his lecture then going untouched and unpublished for sixteen years. That was until, Steinberg writes, “several months” prior to the winter of 1980, “when the artist-filmmaker Juan Downey asked me to read parts of it into the sound track of a film he was shooting about mirror images.”<sup>41</sup> That film was *The Looking Glass* and that occasion was the “proximate” cause of Steinberg publishing in *October* “a short revision” of the paper that came from his 1965 lecture.<sup>42</sup>

I take this detour because Steinberg’s analysis of *Las Meninas* is not just a key moment in *The Looking Glass*, but it also influenced many of Downey’s contemporaneous drawings—some of which literally bear the title *Leo’s Ideas* and *Leo’s Triangles*. Moreover, Steinberg’s analysis in *The Looking Glass* is accompanied by video diagrams which appear very much like those drawings. All of this to say, we have yet another point of intersection between Downey’s video

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<sup>39</sup> The essays Steinberg cites are John R. Searle, “*Las Meninas* and the Paradoxes of Pictorial Representation,” *Critical Inquiry* 6, no. 3 (Spring 1980): 477-88; and Joel Snyder and Ted Cohen, “Critical Response. Reflexions on *Las Meninas*: Paradox Lost,” *Critical Inquiry* 7, no. 2 (Winter 1980): 429-47. Ibid. 46

<sup>40</sup> Ibid.

<sup>41</sup> Ibid. 48. How Downey knew of this unpublished lecture, I have been unable to discern. Though I have tried, I could not find via the Juan Downey Foundation a correspondence between the artist and Steinberg. Nor was their mention of a correspondence between them in the Steinberg archives at the Getty Foundation. It appears as though this generative link remains for now unexcavated.

<sup>42</sup> Ibid. The “remote” cause of publication, writes Steinberg from the first-person perspective, is “the cheerful acknowledgement that every description of Velázquez’ picture remains, in one way or another, inadequate, as I understand mine also to be. Writing about a work such as *Las Meninas* is not, after all, like queueing up at the A&P. Rather, it is somewhat comparable to the performing of a great musical composition of which there are no definitive renderings. The guaranteed inadequacy if each successive performance challenges the interpreter next in line, helping thereby to keep the work in the repertoire. Alternatively, when a work of art ceases to be discussed, it suffers a gradual blackout.”

and graphic production. Importantly, these drawings too make use of the striated spiral motif, but are informed by Steinberg's analysis. Keeping the drawings at the forefront, I will now turn to a few that emerged from this collaborative context. Beyond further grasping Downey's use of the striated spiral motif, these drawings can help articulate the broad strokes of Steinberg's analysis and what about it appealed to the artist.

*Leo's Triangles* (1981) [fig. 9] is the first drawing to have a title referencing the art historian's analysis, and one of four to bear that same name. The image is composed of two contiguous regions. The first is a small, rough study of *Las Meninas*. The second, situated horizontally just below the study, is a long rectangular zone. Both the study and rectangular zone are parts of the same striated swirl, though there are empty spaces on either side of the study in top half of the image—areas where the swirl has been interrupted and the paper left blank. What is new about this image, as the title suggests, is the inclusion of several triangles formed by dotted lines that cut through the swirl. In the study portion you can see two squat triangles overlapping one another; in the rectangular zone, there are four triangles all stretched and scalene. The two distinct image regions and the inclusion of the dotted-line triangles give this drawing a strongly diagrammatic appearance. It is nearly identical to the drawing *Leo's Ideas*, completed the same year and done in greyscale rather than the ochres and faint blues of *Triangles*. The same striated swirl interrupted by triangles and engendering two distinct image regions—one study of *Las Meninas* and one rectangular zone below it.

The function of these triangles is to map the play of vision within *Las Meninas*. They articulate the positions of the picture's "*dramatis personae*"—as Steinberg refers to them in his essay—and the directionality of their glances.<sup>43</sup> The rectangular zone of the drawings above is

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<sup>43</sup> A major element of Steinberg's analysis concerns the positionality of the painting's subjects. There are nine people we can see in the picture, and there are three whose presence is assumed—the king and queen, and the

actually a top-down view of what we see in *Las Meninas* head on, the positions of its figures, and their triangulated lines of sight. Steinberg's analysis of *Las Meninas* is deeply concerned with how vision operates in the image, suggesting "[t]here is surely no painting in which the emission of sight from human eyes becomes quite so structural."<sup>44</sup> He grounds this claim in the idea that the observer of the painting is met by the glances of those contained within it; nearly everyone represented looks out at you looking at the painting. And your looking is purposefully active: the literal midpoint of the canvas, its perspectival construction, and its represented atelier all have non-overlapping centers between which your eye circulates.<sup>45</sup> Downey completed an untitled drawing in 1981 that reproduces *Las Meninas* in the striated swirl yet again, but defines through dotted-lines these three foci, thus compartmentalizing the image [fig. 10].

Taking this exchange of glances and the activation of sight together, Steinberg suggests it is the very activity of perception and subjective recognition through perception which the painting stages. In his words, *Las Meninas* is "concerned with nothing less than the role vision plays in human self-definition."<sup>46</sup> To that point, the final passage Downey asked Steinberg to read for *The Looking Glass* is:

If the painting were speaking instead of flashing, it would be saying: I see you seeing me—I in you see myself seen—see you seeing yourself being seen—and so on beyond the reaches of grammar. Confronted mirrors we are, polarized selves, reflecting one another's consciousness without end; partaking of an infinity that is not spatial, but

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viewer alongside them. Each of these persons is assumed to be a vertex on a triangle, twelve vertices in all makes four different triangles. This is the logic Downey was visualizing in *Leo's Triangles*. For more see, Ibid. 53.

<sup>44</sup> Ibid. 53.

<sup>45</sup> Steinberg bears this point out through a close observation of *Las Meninas*' pictorial field: "Just as the Infanta marks the midline of the canvas; just as the man on the stairs looms at the centric point of the perspective; even so does the looking glass define the centerline of the room. Three centers, nicely triangulated: the canvas as a physical object, the perspectival geometry, and the depicted chamber—each maintains its own middle. Three kinds of center, which in a simpler painting might have remained coincident to avoid unnecessary confusion, are here deliberately dispersed." Ibid. 51.

<sup>46</sup> Steinberg continues in the next sentence: "The picture induces a kind of accentuation of consciousness by summoning the observer's eye to exert itself in responsive action and in intensified multiple acts of perception." Ibid. 52.

psychological—an infinity not cast in the outer world, but in the mind that knows and knows itself known.<sup>47</sup>

It is these vectors of seeing and being seen that Downey attempts to diagram in his *Leo's Triangles* and *Leo's Ideas* drawings.<sup>48</sup> Moreover, we see adaptations of these same diagrammatics in *The Looking Glass*, reproduced as video graphics meant to visualize Steinberg's argument [fig. 11]. Knowing of Downey's interest in the problematics of subjectivity and the challenges it poses to representation—this is, after all, the general consensus concerning much of his single-channel video work—there appears a natural fit between the artist and art historian here.

But what of the striated swirl that literally gives shape to Downey's studies of *Las Meninas*? In what way does this core motif contribute to the development of the ideas mentioned above? As much as the mirror requires light for a reflection to be glimpsed—as we saw Downey visualize in *Mirror/Venus*—so too does *Las Meninas*' lines of sight need to traverse an illuminated space to reach us. This is what I believe the striated swirl motif articulates within the *Las Meninas* drawings: it gives form to the energetic medium vision requires. The most convincing example of this comes from another untitled work on paper, produced sometime in 1982 [fig. 12]. It is perhaps the most exquisite deployment of the striated swirl amongst Downey's studies of *Las Meninas*, and one of his most precisely lined drawings.

*Untitled* is quite a bit larger than Downey's other drawings from this period, measuring sixty by forty inches and oriented vertically rather than in landscape. The striated swirl is composed with stunning precision and density. The space between the concentric lines is as fine

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<sup>47</sup> Ibid. 54. The audio that made its way into *The Looking Glass* differs by a few words though says effectively the same thing, possibly suggesting that Steinberg's published essay was a revised draft of what Downey asked him to record.

<sup>48</sup> *Three Adult Men and Other Triangles* (1981) is another contemporaneous drawing completed that explicitly refers to Steinberg's analysis and takes us this visualization of lines of sight.

as the lines themselves. The swirl occupies the vast majority of the pictorial field and its center is slightly above the midline of the page. Above that center is another study of *Las Meninas*, but rendered as a rectangular negative space within the swirl [fig. 12a]. Downey took care to reproduce the details of the painting, but did so in such faint pencil lines they can hardly be seen. The only elements of *Las Meninas* we can easily see are the three male figures, each composed as portions of the swirl unconnected to the rest. Just below this negative space is another top-down, floorplan of the atelier. However, unlike earlier drawings, here the *Las Meninas* study and its top-down view are not perpendicularly oriented; they are vertically positioned one above another to form the image's central axis. The rectangle that makes up this top-down view has a small break in it close to its top right corner, demarcating the open door in the rear of the atelier. The boundary of the floorplan itself is not outlined but is rather a thin unlined space in the striated swirl. That swirl of lines' true center—the point which it simultaneously encircles and radiates outwards from—is where the mirror is in the represented space of the painting. Two slim scalene triangles find their vertices at either edge of this mirror, and cut through the swirl as more negative space. Small, empty blips in the swirl stand where some of the painting's figures would be, though their lines of sight are not visualized.

In these ways, *Untitled* appears more abstracted than the other drawings coming out of this collaborative context. It contains some of the same elements, but they feel attenuated. There is the study of *Las Meninas* at the top of the image, but it is rendered so faintly as to be barely visible. There is the top-down view of the atelier and the triangulation of positions, but these positions do not easily map onto the painting's figures. Moreover, the inclusion of only two triangles raises the question of the missing pair included in nearly all of the other studies of *Las Meninas*.



What does stand out in this image as anything but attenuated is the striated spiral motif. It has been completed with such precision and density that it demands to be taken as the subject of the drawing rather than *Las Meninas* itself. Or, put another way, what captures one's attention here is less the study of the original painting, and more the field of radiating concentric lines Downey situates the study amongst. Thus, I want to suggest that *Untitled* is less concerned with diagramming the formal elements of *Las Meninas* and more with attempting to represent the energy field that surrounds it. Seeing as the energy field's central point is where the mirror of the atelier is, I take this as a hint that this energy field is electromagnetic in nature—as if the light reflected in the looking glass has the capacity to immerse the whole painting itself. There is a passage from Steinberg's essay—surprisingly unused in *The Looking Glass*—that lends some credence to this energetic reading of *Untitled*.

Steinberg's contention that the whole painting is “concerned with nothing less than the role vision plays in human self-definition” partially rests on a formal analysis that emphasizes the play of light within its pictorial space, such that vision is precisely encouraged. “That is why, in *Las Meninas*, the radiant signals are received from all over,” writes Steinberg. He notes

An uncanny sensitivity to nuance of illumination differentiates every portion of matter. The background alone contrasts dull surfaces with the luster of a scintillant mirror, the sundazzle of outdoor space with the sparse gleam of a concealed window; while the remembered glow of extinguished lamps irradiates the dark ceiling. Most of the space represented is sheer transparency, literally a *per-spective*, a ‘seeing-through.’ All is diaphane, and whatever residue of opaque matter might interfere is given over to promoting perception: an opened door, windows, lamps, mirror, and pictures. No other appurtenances, no other functions—not so much as a chair to sit down on. Nothing but what was created for sight.<sup>49</sup>

I quote this passage at length because of how vividly it captures the significance of light and illumination in *Las Meninas* and, moreover, its latent affinity with *Untitled*. Downey completed

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<sup>49</sup> Steinberg, “*Las Meninas*,” 53.

the drawing sometime in 1982, so it also stands to reason he did so after reading the final version of Steinberg's essay, which was published in the winter of 1980. *Untitled*, I think almost exactly, renders *Las Meninas* as an image where "radiant signals are received from all over." That all-over effect is embodied in the concentric lines reaching beyond the borders of the painting and its diagrammed interior, swirling outward into a surrounding space. And the movement of those lines emanates from *Las Meninas*' mirror—an object twice mentioned above for its relation to luminosity.

If it is the case that the painting contains "[n]othing but what was created for sight," the implicit point here is that sight requires an energetic medium to traverse. I suggest Downey's striation motif is making that energetic medium legible. This brings us back to the idea that vision and electromagnetic energy have a necessary, though easily unacknowledged, connection. From the vantage of his aesthetics of energy, this is something Downey would have been uniquely sensitive to. *Untitled*, like many of his drawings from this period, helps make visible the presence of those "radiant signals" that make the viewing *Las Meninas* possible.

Generally speaking, this is the point I have been trying to make in this section: Downey's graphic production appears concerned with visualizing what he regarded as the energetic nature of those Baroque works he was exploring at this time. In that way, even though thematically his interests seem far and away from the energetically-obvious projects he undertook earlier in his career, there is a throughline. These drawings are no less contributions to his aesthetics of energy than his electronic sculptures were. No doubt, at first glance they appear as less obvious contributions, but when we read the drawings central spiral motif in the context of Downey's preceding project (the *Meditaciones* series), the history of visualizing electromagnetism (Faraday's lines of force), and more broadly the history of art (rays of light in the graphic

medium), then the link becomes clearer. Indeed, the drawings demonstrate Downey's capacity to bring an electromagnetic orientation to where one might least expect it: the works of Velázquez mediated by paper. And therein their innovativeness lies—the juxtaposition of unlikely elements held together by an energetic sensibility that was not exclusively bound to video or electronic technologies, but rather operates as a core component of all art and aesthetic experience as Downey understood it.

To conclude this chapter, I want to now turn to an event earlier in Downey's life that might shed some light on his interest in Velázquez' *Las Meninas* and its radiant energies. It was an event where Downey, maybe for the very first time, was confronted by and experienced those same connections between art, energy, and the unknown I have been emphasizing throughout the dissertation as emblematic of his practice. It appears a fitting place to end.

#### “The Radiant Unknown”

The objective of this section is to relay an impactful moment Downey first writes about in “Travelogues of Video Trans Americas,” and then later describes in a voiceover for *Las Meninas* (1975). The moment concerns the times Downey would visit Velázquez' painting at the Prado Museum while living in Madrid in 1962. This event would leave a lasting impression, and is at least partly responsible for Downey's 1980s, Baroque-oriented thematic turn discussed above. More than this, however, the event unfolds the special connection Downey held between art, energy, and the unknown that I have been suggesting is one key to his aesthetics of energy. In that way, it returns us to certain points made in the first section of the chapter, as well concerns that have been with us from the very beginning of the dissertation.

It was the summer of 1962. Downey had left Santiago, Chile, after completing his studies. He would only be in Madrid for a short while before moving to Paris, and then Washington D.C. with New York City after that. He was a young man. He remembers all this in August 1974, while he was back in Santiago taping *Video Trans America*. Perhaps he was feeling particularly reflective being back home.

Downey tells his reader of the daily visits he would make to the Prado Museum (such frequency could be one explanation for the kind of attention with which he engaged art history during his later career). And each day, if only for a short while, he would make sure to see Diego Velázquez' famous painting *Las Meninas*. Inside its gallery, a small mirror was placed opposite the painting such that

you can also perceive its reflection, along with the magic atmosphere of the whole room. The natural light entering from a side window enveloped me many times in the illusion that I was actually in the baroque space of the painting, as if it were possible for me to walk around the fuzzy-edged figures of *'The Maids'*. I could feel my body disappearing behind the Infanta's bright silk torso, my skin becoming brown-ochre and painterly.

The magic rituals that I performed in this place of Velázquez were body and mind enlightenments only similar to facing God, the Great Totality, the White Light, the Radiant Unknown.<sup>50</sup>

The specific feature of this experience I want to call attention to is the role "natural light" plays within it. We are already familiar with, thanks to Steinberg, the special insistence that Velázquez himself placed on light and illumination within the painting, and so I suggest there is a supercharging of the effects of luminosity here.

I regard that luminosity, that "light entering from a side window" as a kind of catalyst for the whole captivating and transporting encounter Downey experienced and later relays to us. That light blended the real space of the gallery and the represented space of the painting with otherworldly effect. We could even retroactively think *Untitled's* [fig. 12] lines of force as

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<sup>50</sup> Downey, "Travelogues," 328-29.

picturing the way light suffuses across the border of *Las Meninas*' frame and spills into an imagined gallery space—a possible diagram of the 1962 event. In Downey's words, it was his immersion in that light which generated the "illusion" of being in the "place of Velázquez," a place where he experienced "body and mind enlightenments." Crucially, Downey insists those enlightenments were "only similar to facing God, the Great Totality, the White Light, the *Radiant Unknown*."<sup>51</sup> I emphasize this last phrase because I believe it is a brilliant summation of many of the ideas broached earlier in this chapter, and indeed the whole of this project.

In the first section, I claimed that Downey regarded electromagnetism as especially well-suited to engendering those kinds of art encounters that bring spectators closer to the unknown—a principal concern of art itself, as Downey saw it. That was because electromagnetic energy sometimes behaves in mysterious ways, generating unexpected connections and relations between entities caught within its force. This was what I suggested Downey was gesturing towards in "The Smell of Turpentine" with the metaphor linking his attraction to video and the attraction of electrons within the video apparatus. It was an image predicated on being swayed by an energetic force in the making of something aesthetically significant.

This is also what I attempted to describe by invoking Morton's equation between art, electromagnetism, and non-locality, or the confounding sense of being affected by a thing not within one's own vicinity. Plato (via Socrates) describes aesthetic experience as much like a "string of magnets" where some compelling force is transmitted "from the Muse, goddess of inspiration, to the artist, to the work, to the performer, to the audience, all magnets linked by some demonic force. We call that demonic force electromagnetism," Morton explains, and this seems especially true in Downey's case when he stood in front of (but also somehow inside)

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<sup>51</sup> Ibid. Emphasis added.

Velázquez' painting.<sup>52</sup> That experience was not only metaphorically transmitted between work and audience like a string of magnets, but seeing as light energy was integral to the experience itself, in some sense electromagnetism was the *real* initiator of what Downey felt.

While I am insisting that light is the critical component here, this is not, for example, how Downey scholar Valerie Smith reads this moment in her "Juan Downey: The Invisible Architect" (2011). She ties Downey's experience to his "obsession with mirrors" and the fact that the artist had written the name of Jacques Lacan in his personal notebook. As Smith understands it, Downey's "narrative above transforms Lacan's idea of ego establishment/recognition [explained in "The Mirror Stage"] in to a series of ego dissolves into the folds of the imaginary."<sup>53</sup> Smith's decision to focus here on subjectivity and its dissolution is a helpful reminder of the contribution I hope to make in reading Downey's work through the aesthetics of energy. I am not disputing the claim that Lacanian psychoanalysis was significant for Downey's understanding and interrogations of the self or his interest in reflective surfaces, but I do think it is critical—if heretofore unremarked—that whatever dissolution he felt took place in the presence of *Las Meninas* was the effect of the painting's relation to an illuminated space. It is almost as if once the light of the gallery is taken into account, which it explicitly is in Downey's retelling of the experience, the painting/gallery environment becomes already installational, something made possible by the sensuous presence of light energy.

Shifting emphasis in this way allows us to think of the light of the gallery as a kind of media. By that I mean, etymologically speaking, light becomes the "in-between" facilitating Downey's experience. Between the gallery's mirror, the painting itself, Downey's vision, and the

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<sup>52</sup> Morton, *Realist Magic*, 21-22.

<sup>53</sup> Smith, "Juan Downey," 20.

open window, light circulates within this expanded space in a way that makes the artist's interest in the strange and alluring, connective possibilities of electromagnetism appear not so surprising.

What is surprising, perhaps, is that we are here afforded a glimpse of Downey's electromagnetic interest prior to any of his work with video, or even the electronic sculptures. If the innovativeness of the previous section's drawings lies in their capacity to bring unexpected elements together (visualizing the radiant forcefields of Baroque painting on paper), this innovativeness now appears as an artifact of Downey's initial encounter with *Las Meninas*. By that I mean, from at least the summer of 1962 onwards, he was entertaining the possibility of unexpected connections between art and energy. Affirming this is tantamount to the argument for reading his practice as an aesthetics of energy. This is not to say other topics such as subjectivity and its representation were not crucial for him as well, but rather that there was a major constant in his practice that has received comparably little attention to date. That constant—the aesthetics of energy, in its persistence and transformability—is what I have hoped to bring forth throughout this dissertation.

Thus, we are left here at the end, which temporally is Downey's beginning, with the "Radiant Unknown." He even capitalizes the phrase like a proper noun to denote its importance; moreover, it is mentioned in the same sentence with nothing less than "God," "the Great Totality," and "the White Light," which bears its own energetic resonance. I believe Downey's aesthetics of energy can be described in one way as an attempt to reckon with the Radiant Unknown, an attempt to sensitize himself and others to the ways in which radiant energies might open onto or otherwise facilitate art experiences that "bring us to grips with the yet undefined."<sup>54</sup> It was the Radiant Unknown that Downey glimpsed when viewing *Las Meninas* in 1962 and I

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<sup>54</sup> Downey, "Architecture, Video, Telepathy," 344.

want to suggest that it was the Radiant Unknown he sought after through his practice from there on in different ways and across all manner of media and thematic concerns; in telling the story of Downey's aesthetics of energy, I have hoped to clarify just how he did so.



## Conclusion

This thesis has argued for a new interpretation of the work of Chilean multimedia artist Juan Downey under the banner of an aesthetics of energy. I claimed his aesthetics of energy is a concerted, multi-media attempt to understand how energies might play a transformative role in the making of art; how they can be channeled in the formation of objects, environments, and identities; and how, and towards what ends, they have been positioned as resources in the developments of modernity, de/coloniality, and the geopolitics of the Cold War. Each of the previous chapters have attempted to clarify an element of this claim, and in doing so, articulate the persistence, transformability, originality, and significance of Downey's aesthetics of energy.

Beginning in chapter one, I took a longer historical view to clarify the different scientific, technical, and aesthetic conditions of possibility that made Downey's aesthetics of energy possible; in chapter two, I explored the first concrete realization of that aesthetics in the form of his electronic sculptures (1967-1969), and explored the ways they channeled the materiality of electromagnetism to suggest an alternative to the cybernetic interpretation that has thus far defined their literature; chapter three saw Downey expanding his practice beyond sculpture into performance and installation, with the implication that electromagnetism can be thought as a kind of ecological media, an intimate "in-between" that facilitates connections between different entities at an environmental level; in chapter four, a more critical take on the human uses of energies was introduced through the concept of energy as resource, and I demonstrated how this critique emerges in some of Downey's most well-known works, *Video Trans Americas* (1973-76) and his Amazon tapes (1976-79); and chapter five shifts gears to Downey's late career and some of his lesser-known drawings with the intention of articulating the enduring presence of the

aesthetics of energy within a body of work whose media and thematic concerns appear almost irreconcilable with it.

The end result is a practice whose conceptual variety is only matched by its array of media and multitude of energies. From electronic sculptures, to dance and multi-channel video installations with performance elements, to single-channel videos done in a quasi-documentary style, and simple graphite and paper drawings—across this range of media, I claim, Downey’s aesthetics of energy was embodied. And from cosmic rays, radar and radio waves, to kinetic movement, electronically-generated sound, and light, to brainwaves, solar radiation, the metabolic forces of living things and their ecologies, to the latent energies inside of minerals, and the spiritual forces of the Amazon integral to Yanomami cosmology—through these energy forms, I claim, Downey’s aesthetics of energy was activated.

While these remarks gesture towards the contours of this dissertation, an exhaustive recounting of everything that has been claimed and explored here is not the intention of this conclusion. Rather, I would like to finish with an analysis of one last Downey work, a drawing for a performance that went unrealized. Not only does it capture the core themes of what his aesthetics of energy was—in its mobilizing of the medial potentials of energies while critically configuring energies in within a precise geopolitical scene—but its unrealized state occasions a speculative open-mindedness. This appears a fitting place to end for the study of an artist who believed the aesthetic experience is “nothing but enjoying the unthinkable.”<sup>1</sup>

In 1969, Downey drew *Invisible Energy in Chile Plays a Concert in New York* [fig. 1]. A line of text underneath the drawing’s title tells us we are looking at a project for the Avant Garde

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<sup>1</sup> Juan Downey, “Travelogues of *Video Trans Americas*,” originally published in *Radical Software* 2, no. 5: Video and Environment (Winter 1973), and reprinted in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019). 324.

Festival, New York, 1969.<sup>2</sup> *Invisible Energy in Chile* shows the Americas outlined in pencil with the cities of Santiago and New York indicated by dots; another larger, encircled dot off to the right, hovering between them somewhere above the Atlantic reads “satellite.” One arrow with the word “music” written above it courses upwards diagonally from Santiago to the satellite; an identical arrow of “music” moves from the satellite to New York. In this interplay of cities and music via satellite, Santiago is labeled “2,” the satellite “3,” and New York “4.” What occupies the first position—labeled “1” and set off to the left side of the drawing, over the Pacific—is “ELECTROMAGNETIC ENERGY” tilted ninety-degrees and parallel to a list of six different electromagnetic energy forms:

- 1) COSMIC RAYS
- 2) GAMMA RAYS
- 3) X RAYS
- 4) ULTRAVIOLET
- 5) INFRARED
- 6) HERTZIAN WAVES

“ELECTROMAGNETIC ENERGY” and its accompanying list of forms are both set against a background of incredibly fine, swirling lines of varying width and density.<sup>3</sup> The gradients created by their variation grow lightest by the text, darken at some of the swirl’s edges, and lighten again at its point of origin: the coast of Chile. These undulating currents all emanate from the same place, Downey’s home country. And a small rectangular diagram, located below the swirl and above the drawing’s bottom edge, gives an idea of what will be done with these currents of electromagnetism. Six colored rows, numbered for each of the energy forms above

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<sup>2</sup> The history of this festival—which was besieged by, and created its own, problems—is quite fascinating. While Downey’s name is included in a promotional flyer for the event, there is no indication he submitted anything to it. This drawing, which was later exhibited at a solo show of Downey’s, is the only trace of this imagined performance.

<sup>3</sup> Much like those discussed in the previous chapter that found their way into Downey’s studies of Velázquez’ paintings. Here we have yet another point of connection between this visual motif and the representation of radiant energies.

and looking almost like the spectrum of visible light, are superimposed by four columns with vertical text. The first column, situated on the left, reads “ENERGY.” From there, the rows course into the next column: “DETECTORS,” then “ELECTRONIC ORGAN,” and finally terminate at “MUSIC.” Above the whole diagram is text that says “IN SANTIAGO, CHILE...” The idea being, in Santiago, all these forms of energy would be picked up by detectors and processed by an electric organ to make the music that would then be transmitted via satellite to New York for the Avant Garde Festival. For whatever reason, that music never played.

Earlier the same year, 1969, Downey had produced a sculpture, *With Energy Beyond These Walls*, and another performance, *Invisible Energy Dictates a Dance Concert*, that operated by very similar principles. These two works also used electromagnetic energy detectors and electronic organs to make sound. *With Energy Beyond These Walls*—discussed in chapter two—produced the sound as part of an act of communication between the sculpture’s two components. *Invisible Energy Dictates a Dance Concert* in its first iteration—discussed in chapter three—took the detectors, scattered them about the Smithsonian complex at National Mall in Washington D.C., and transduced their readings into different sounds. Five different kinds of electromagnetic energy were detected, transduced, and played for five dancers (Carmen Beuchat, Kitty Duane, Ana Maria Fuensalida, Victoria Larrian, and Titi Lamadrid). It was up to them to interpret what they heard, acting as embodied conduits for invisible energies.<sup>4</sup>

Both of these works are obvious precursors to *Invisible Energy in Chile Plays a Concert in New York*, though restricted themselves to far more geographically immediate regions, requiring no satellite assistance. *Invisible Energy in Chile Plays a Concert in New York*—if it

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<sup>4</sup> This performance’s second iteration used seven different detectors for seven different electromagnetic energy forms and located them throughout the New York City Cinematheque building. In this case, six dancers interpreted the transduced sounds and their movements were relayed via closed-circuit video to another performer—the ballerina Gabriela Figueroa. She then moved in response to them.

were to have been performed—would be closest in nature to *Invisible Energy Dictates a Dance Concert*, though the exponential increase in distance traveled by the energies, the triangulation of locales via these energies, and the more expansive media infrastructure involved are all critical features that set this work apart. The fact that its performance was never realized makes these features hypotheticals, but I do want to spend some time on them because they open onto a compelling summation of Downey's aesthetics of energy. That is, what we have in *Invisible Energy in Chile Plays a Concert in New York* is a mobilization of the medial possibilities of energies, and a configuring of those energies within a precise geopolitical scene. I will now elaborate on how this is so.

First, this idea of the mobilization of the medial possibilities of energies. *Invisible Energy in Chile*, like much of Downey's practice I argue, makes energies its media. In its drawn form this is not the case, of course. At that level we are talking about graphite, colored pencil, and paper. But if we were to speculate on its performance, then those six forms of electromagnetic energy would be just as constitutive of the work's materiality; they would play as an integral part in making the artwork what it is at the physical level.<sup>5</sup> This appears to me a clear way of understanding media in an art historical sense, as the material that composes the object. These energies can also be understood quite literally as *Invisible Energy in Chile*'s media in a broader sense—that is, as the “in-betweens” that facilitate transmission or communication.<sup>6</sup> The music sent via satellite from Santiago to New York would have been sent as electromagnetic signals, to say nothing of its origination as electromagnetic signals processed by the detectors. It is at this

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<sup>5</sup> Whereas for *With Energy Beyond These Walls* and *Invisible Energy Dictates a Dance Concert*, those energies are concretely part of the artworks' constitutive materiality, their media.

<sup>6</sup> Here I am thinking of the etymology of “media” in the singular as “medium,” which is meant to describe an “intervening substance through which a force or quality is conveyed.” Online Etymology Dictionary, s. v. “media,” accessed March 14, 2022, <https://www.etymonline.com/word/media>.

level of constitutive materiality and the level of enabling transmission that well-specified electromagnetic energies are operating as the media of *Invisible Energy in Chile*.

I suggest it is in these ways we can understand this artwork as opening onto Downey's interest in mobilizing the medial possibilities of energies. In a subtle reorientation of information-age logic characteristic of Downey's work from the late-1960s, the electromagnetic energies here are not primarily or most importantly channels for information to be circuited via satellite (though they perform in that way too). Instead, they would have been the performance's animating force had it taken place. Those electromagnetic emissions detected in Santiago would have been the first step in a complex process of mediation initiated and sustained by electromagnetism. While this appears as an obvious technical fact of electronic telecommunications, what I have tried to show throughout this dissertation is that Downey would have viewed it as much more. Energies for him have medial possibilities that include, but are not limited to, their technical instrumentalization. Downey understood well the media infrastructures of his day, but also knew their electromagnetic nature could open onto aesthetic experiences unanticipated by those infrastructures.

And what of the fact that these energies would have, indeed, been detected in Santiago and sent via satellite to New York City for a performance at the 7<sup>th</sup> annual Avant Garde Festival in 1969? It is this geographic triangulation, and the implications of its coordinates, that open onto another critical feature of Downey's aesthetics of energy—though one that would become more pronounced later in his career. That feature is the critical configuring of energies within a precise geopolitical scene. It is to this point I will now turn.

With *Invisible Energy in Chile*, Downey is complicating and reorienting the energetic relations that exist between Latin America and the United States during this time. To start to

understand how this is so, it is important to set the historical stage. By 1969, the US had already been funding the political opponents of Salvador Allende with the hopes of keeping him out of office and preventing a nationalization of Chile's copper mines—many of which were owned by US companies, like the Anaconda Copper Mining Company (a one-time target of Downey's critique).<sup>7</sup> In 1964, US financial support of Allende's opponent Eduardo Frei succeeded, but this would not be so in 1970 when Allende would eventually win the presidential election. There must have been much hand-wringing in US government offices in 1969 about the looming the Chilean election, since a socialist turn would upend the profitability of US extractive regimes in the country.<sup>8</sup>

Copper is emblematic of what I have termed elsewhere in this dissertation an “energetically-rich material.” While not a form of energy in itself, an “energetically-rich material” can be understood as possessing a kind of latent energy or is otherwise integral to energetic processes, and is a key component of Downey's critique of energy as resource developed in chapter four. In the case of copper, it conduces electricity nearly better than any other mineral on earth and is indispensable to the production of electronics.<sup>9</sup> The electromagnetic detectors, the electronic organ, and the satellite involved in *Invisible Energy in Chile* would all have had copper components, and it is not implausible to think some of that copper was mined in Chile by an US-owned company.

I mention this to frame the US's relation to Chile at this time as not entirely unconcerned with energies and energetically-rich materials. Moreover, it is similarly not implausible to think

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<sup>7</sup> Here I am referring to Downey's *Anaconda Map of Chile* (1973), which featured a painted map of Chile as the ground over which a live anaconda would slither. Downey was instructed to remove the animal during the work's exhibition at the Center for Inter-American Art.

<sup>8</sup> “The Allende Years and the Pinochet Coup, 1969-1973,” United States State Department: Office of the Historian, accessed March 10, 2022, <https://history.state.gov/milestones/1969-1976/allende>.

<sup>9</sup> “Metal properties table,” TIBTECH Innovations, accessed March 14, 2022, [https://www.tibtech.com/conductivite.php?lang=en\\_US](https://www.tibtech.com/conductivite.php?lang=en_US)

that some of the US's covert schemes against Allende in 1969 were comprised of the monitoring of electronic communications for sensitive information—an intervening in the flow of electromagnetic signals from one actor to another.<sup>10</sup> The Santiago-based energy detectors of *Invisible Energy in Chile* would have been similarly enmeshed in this energetic space, perhaps picking up some piece of intel the US wished it had. That same year, 1969, Downey was discussing an electronic sculpture exhibited in Washington D.C, *Invisible Energy*, and noted that the radio frequency it was tuned to was “Citizen’s band, Channel 23 and 10, which are used by the police and fire department. So those types of people were activating the sculpture without knowing it, and that was part of the fun...”<sup>11</sup> *Invisible Energy in Chile*, too, might have been activated by the unwitting, had it come to fruition.

This is all to say that in 1969, the energetic environment of Chile broadly considered was a target of US governmental and corporate interests. Energetically-rich materials were sought out to be extracted and energetic signals were sought out to be captured and instrumentalized. It is within this historical context, this precise geopolitical scene, that Downey’s unrealized *Invisible Energy in Chile* should be viewed. Elements of the electromagnetic environment that would have animated this performance were also implicated in the operation of Cold War interventionist techniques and technologies. Here though they become the motivating force by which the artwork would come into being. Rather than have the energies of Chile be siphoned away in an advanced form of the colonial order where the US takes what it wants from the southern hemisphere, Downey reorients the flow.

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<sup>10</sup> Such forms of espionage are a hallmark of the CIA and other intelligence services.

<sup>11</sup> Jud Yalkut, “The Hippie and the Computer,” *The East Village Other* 4, no. 38 (August 20, 1969): 13. Quoted in Felicity D Scott, “Nothing is a Closed Circuit,” in *Juan Downey, 1940-1993*, eds. Julieta González and Javier Rivero Ramos (Mexico City: Ediciones MP, 2019), 501-02.



To phrase this differently, *Invisible Energy in Chile* would have taken what are effectively Latin American energies—given their chosen geographic specificity—and afforded them an agency and determining force, temporarily subverting the North/South hierarchy of geopolitical and geo-economic power, in so far as the music generated by them would act as the performance’s score. These are not energies to be instrumentalized for surveillance, for example, or the collection of information. Instead, they would open onto an aesthetic experience unanticipated by the media infrastructures which they animate, and the state actors who would use them. To be sure, Downey’s sensitivities to the US and European dispossession of Latin American energies would sharpen as his career would continue—culminating in *Video Trans America* and the Amazon tapes—but *Invisible Energy in Chile* is important because of how it prefigures this sensitivity. This unrealized work understood that the terrestrial specificities of energies cannot be taken for granted, and that is another critical feature of Downey’s aesthetics of energy writ large.

*Invisible Energy in Chile Plays a Concert in New York*’s concert never played. That this is so does not preclude its insights. Even in its drawn form, the fact “ELECTROMAGNETIC ENERGY” is rendered with such exacting care and variation hints at the place the energy would hold in Downey’s practice. Speculating on the artwork’s realization opens onto what I have argued are two foundational elements of Downey’s aesthetics of energy: the mobilization of the medial possibilities of energies, and their critical configuring within a precise geopolitical scene. It is in these ways *Invisible Energy in Chile* serves as a compelling summation of what Downey’s aesthetics of energy is, and serves as a fitting place to end.

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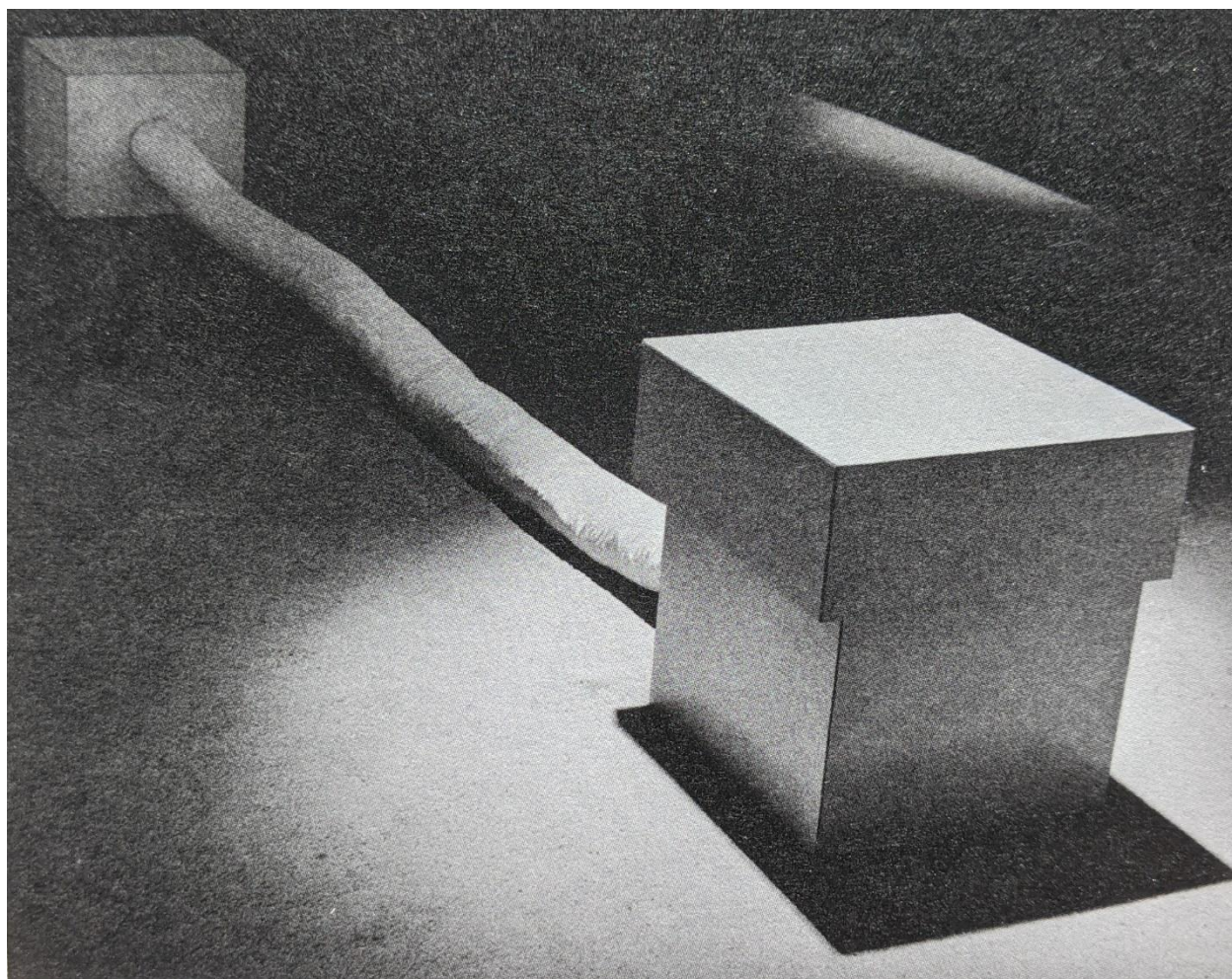
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Figure 2  
*Radioactive Chair*, 1968  
In Collaboration with Fred Pitts  
Plywood, Formica, and electronic parts  
Destroyed





Installation View – Corcoran Gallery of Art, Washington D.C.

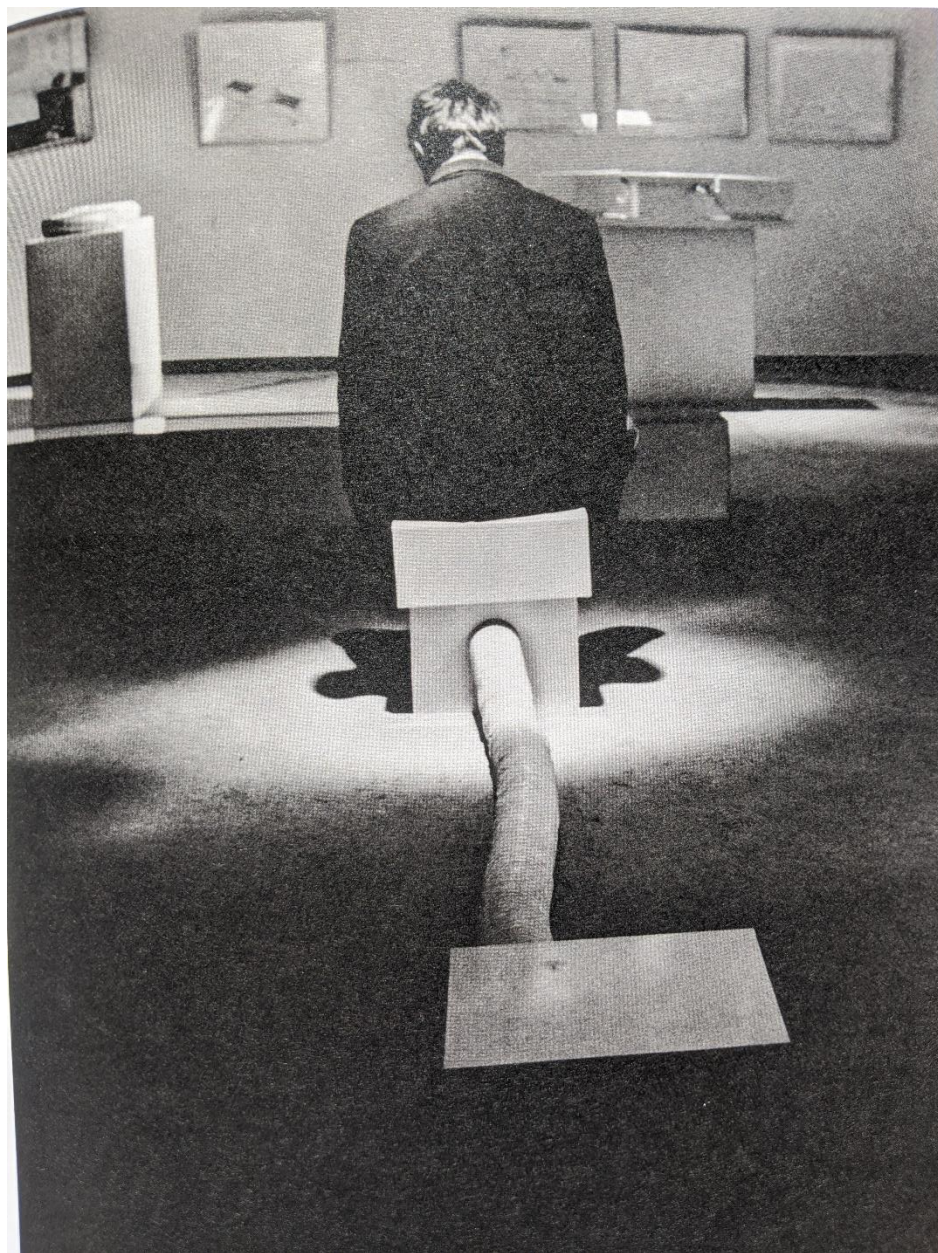


Figure 2a  
*A Radioactive Chair*, 1968  
Colored pencil and graphite on paper  
30 x 22 in  
Collection: Juan Downey Foundation

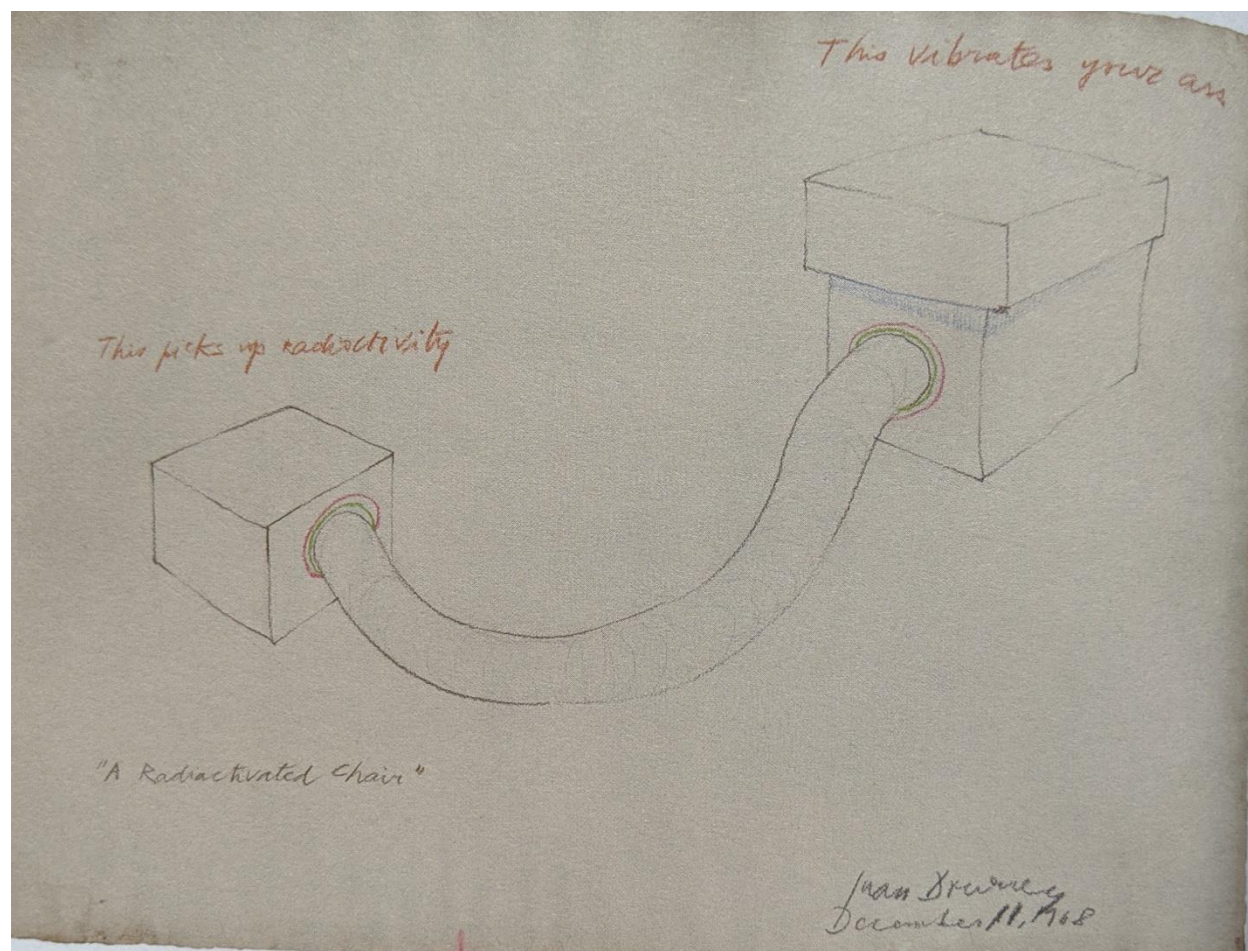




Figure 3

*Comunicación entre tres cuerpos: magnetismo, célula fotoeléctrica, sonido* (Communication Between Three Bodies: Magnetism, Photoelectric Cell, Sound), 1966

Graphite and colored pencil on paper

30 ¼ x 22 ¼ in

Collection: Juan Downey Foundation, New York

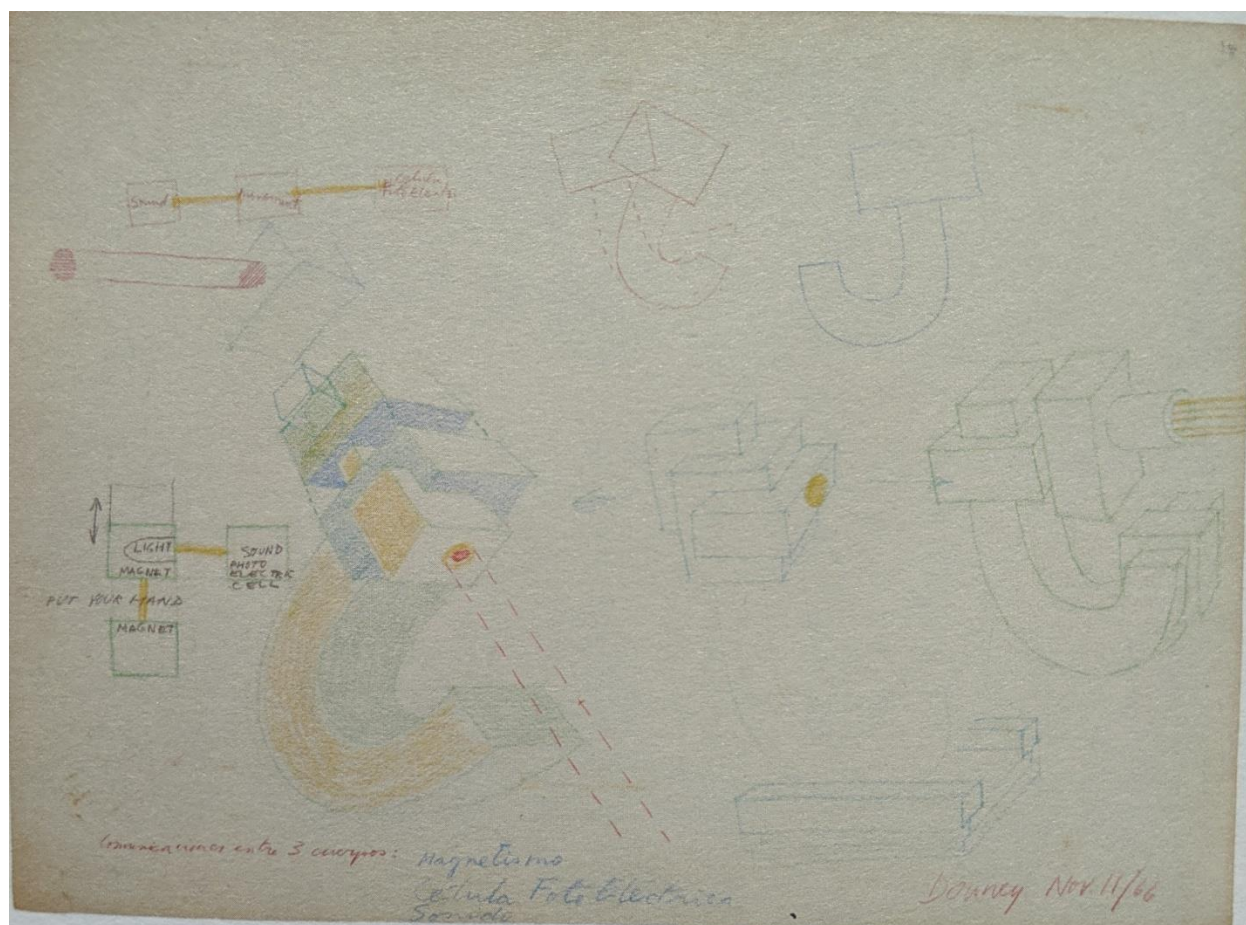


Figure 4  
*A Machine with Three Conditions*, 1968  
In Collaboration with Fred Pitts  
Plywood, Formica, and electronic parts  
Destroyed

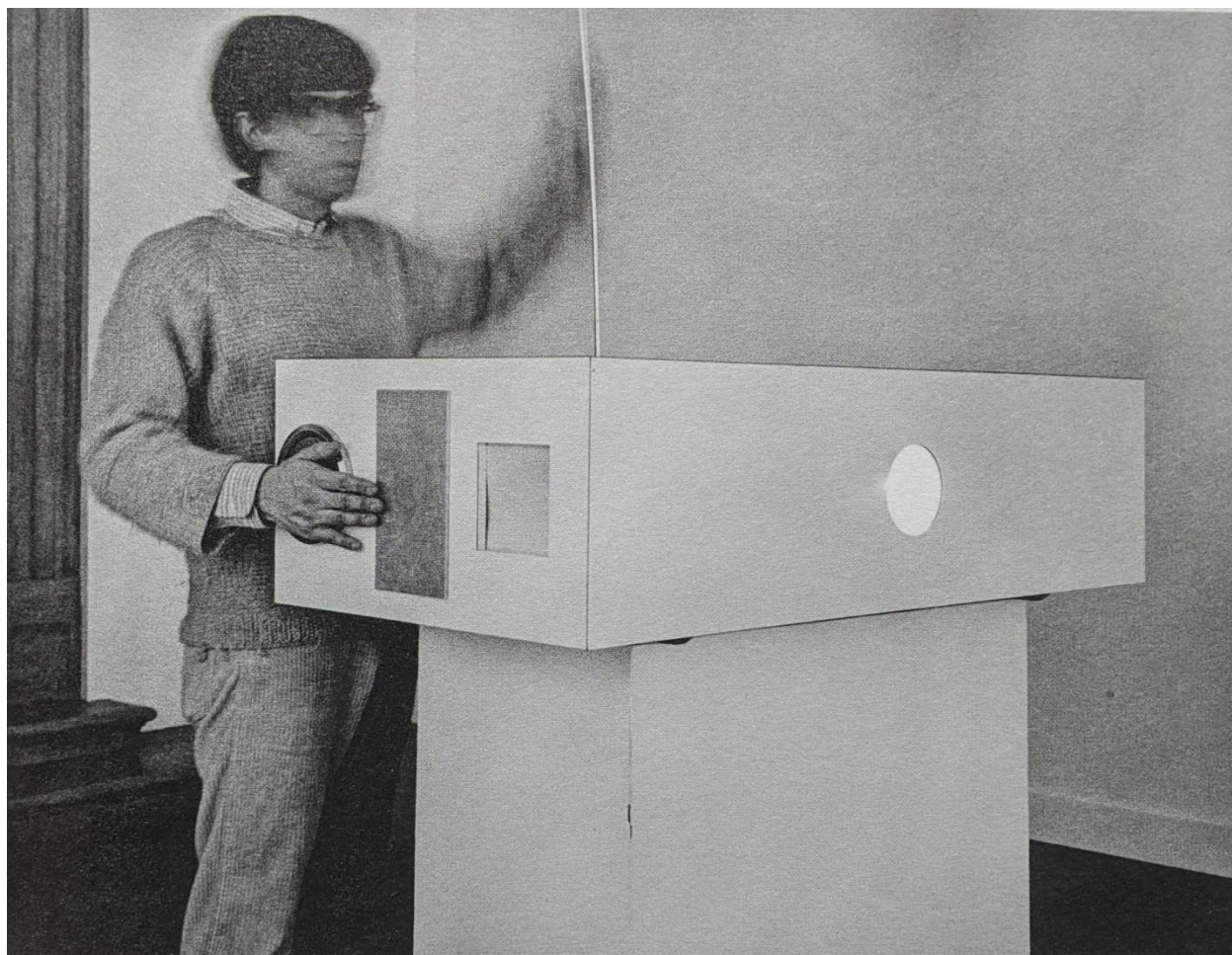




Figure 5  
*With Energy Beyond These Walls*, 1969  
Plywood, Formica, and electronic parts  
Destroyed

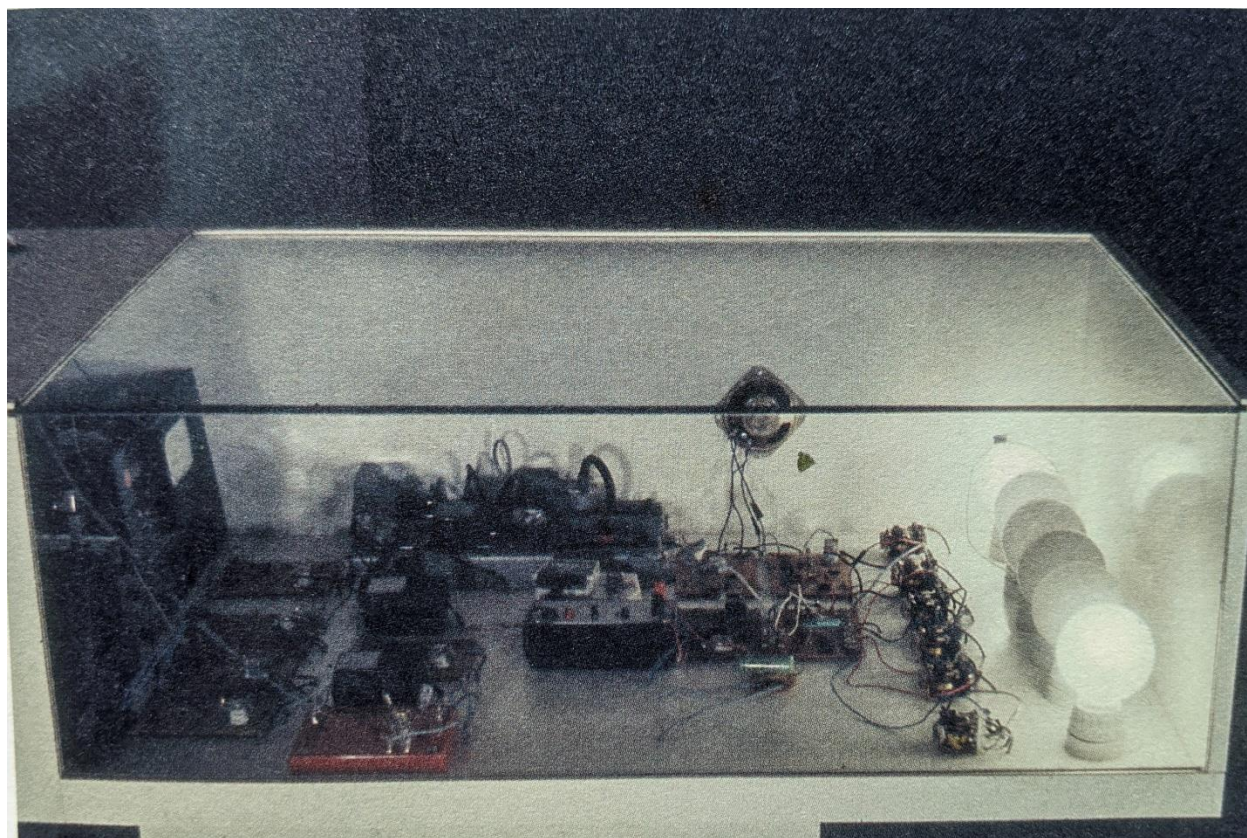




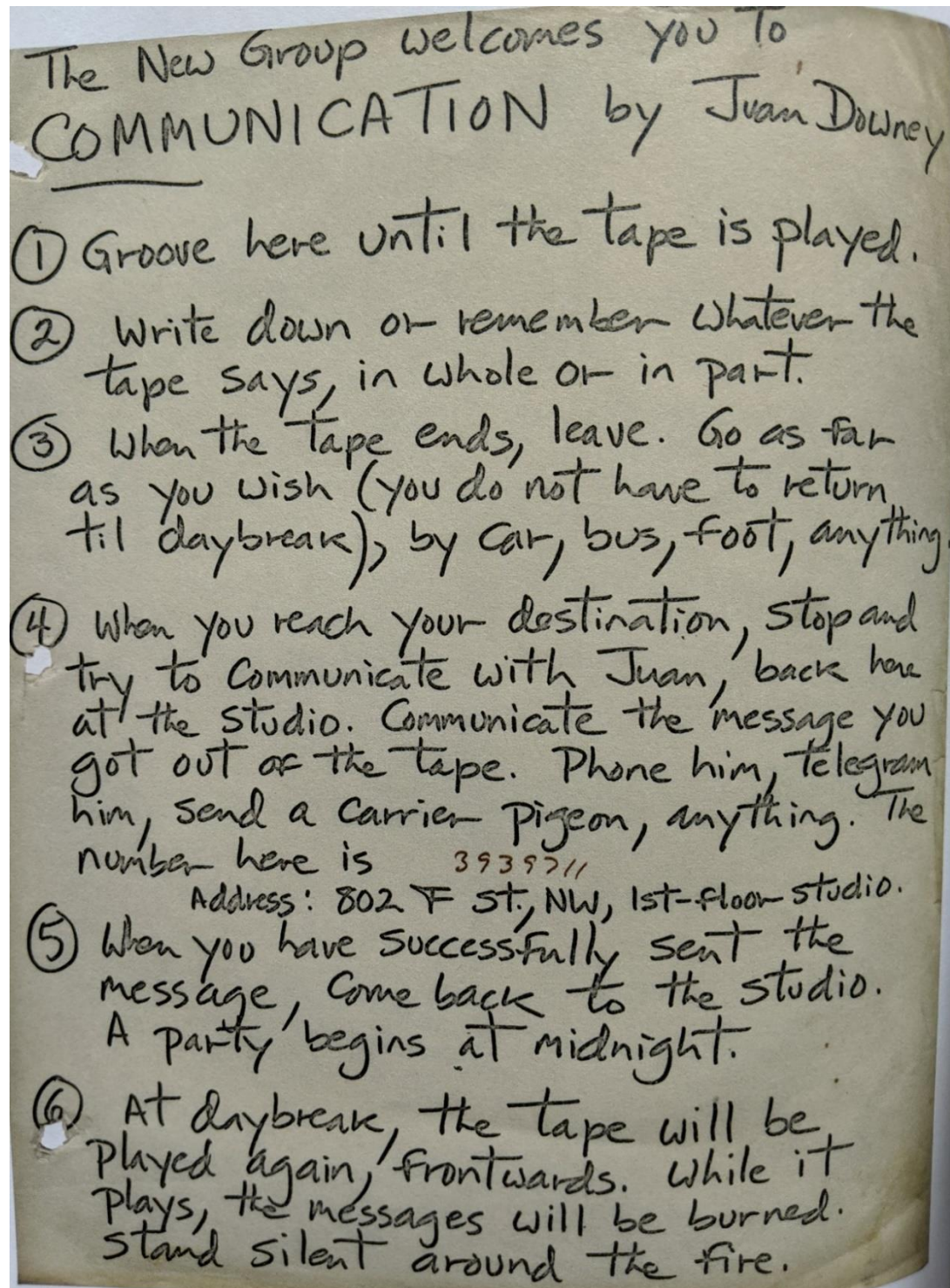
Figure 6

*Communication*, 1968

Christ Church, Washington, D.C., January 20 & 26; Smithsonian Institute, Washington, D.C.,

December 6, 1968; *Fete-le Vous Meme*, Galerie Jacqueline Ranson, Paris, April 2-23, 1968

In collaboration with the New Group



### Chapter 3

Figure 1

*Plato Now* preparatory sketch 1,  
graphite and colored pencil, personal notebook,  
published in the exhibition catalog of *Juan Downey: The Invisible Architect*, held at the MIT List  
Visual Arts Center and the Bronx Museum of Art, 2011.

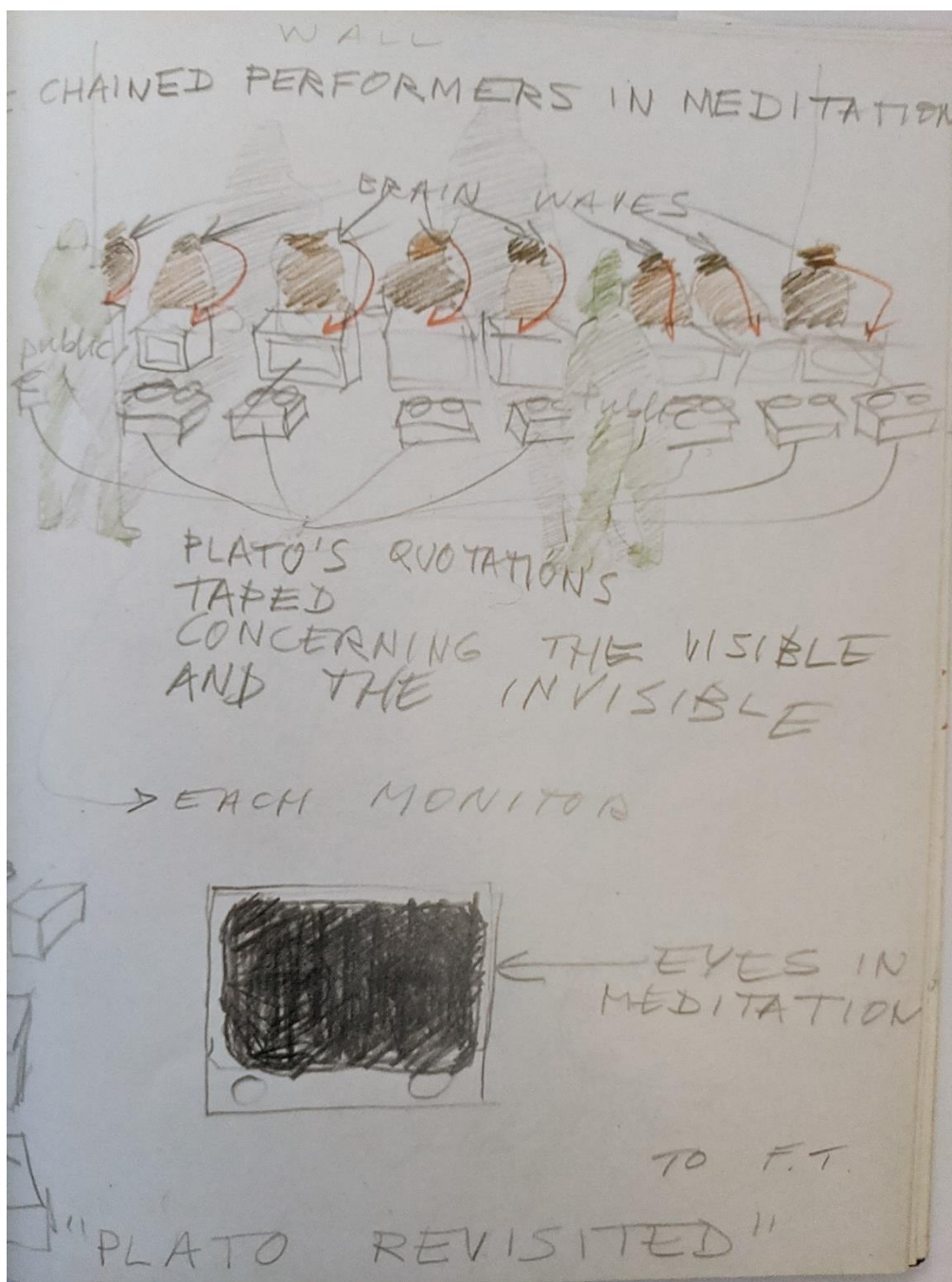


Figure 2

*Plato Now* (Installation View),

9 single-channel, closed circuit analog video systems, 9 neuronal sensors, tape decks, spotlight, screen grab from *Radical Software 2*, no. 5 (<http://www.radicalsoftware.org/e/volume2nr5.html>)





Figure 3

Juan Downey, *Plato Now* (detail)

9 single channel, closed circuit analog video systems, 9 neuronal sensors, tape decks, spotlight,

cropped screen grab from *Radical Software 2*, no. 5

(<http://www.radicalsoftware.org/e/volume2nr5.html>)



Figure 4

*Plato Now* preparatory sketch 2,  
marker and graphite, archival material attained by request from the Everson Museum of Art,  
Syracuse, New York.

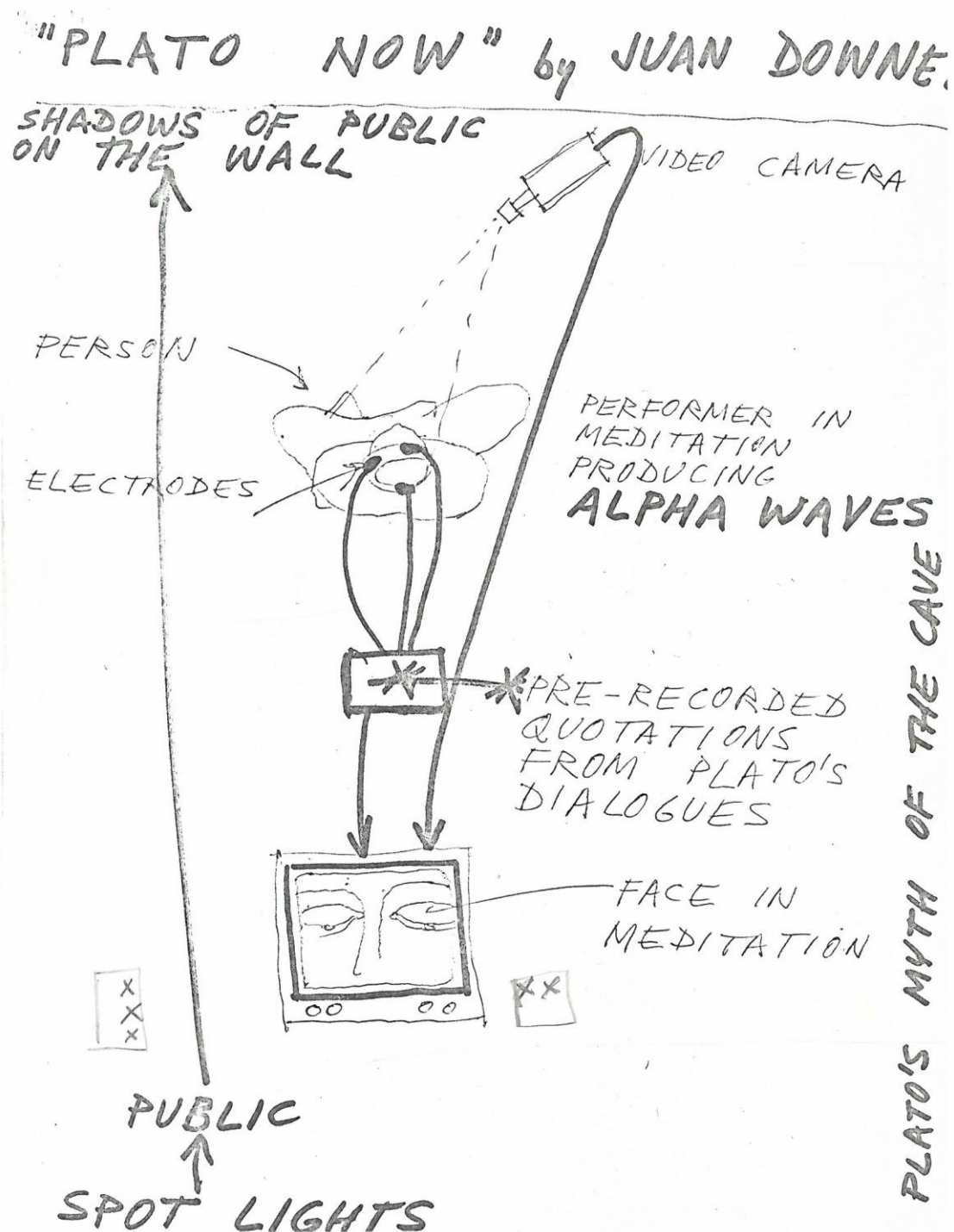


Figure 5  
*Plato Now* (drawing), 1972  
 graphite and colored pencil, and collage elements on Bainbridge board  
 private collection.

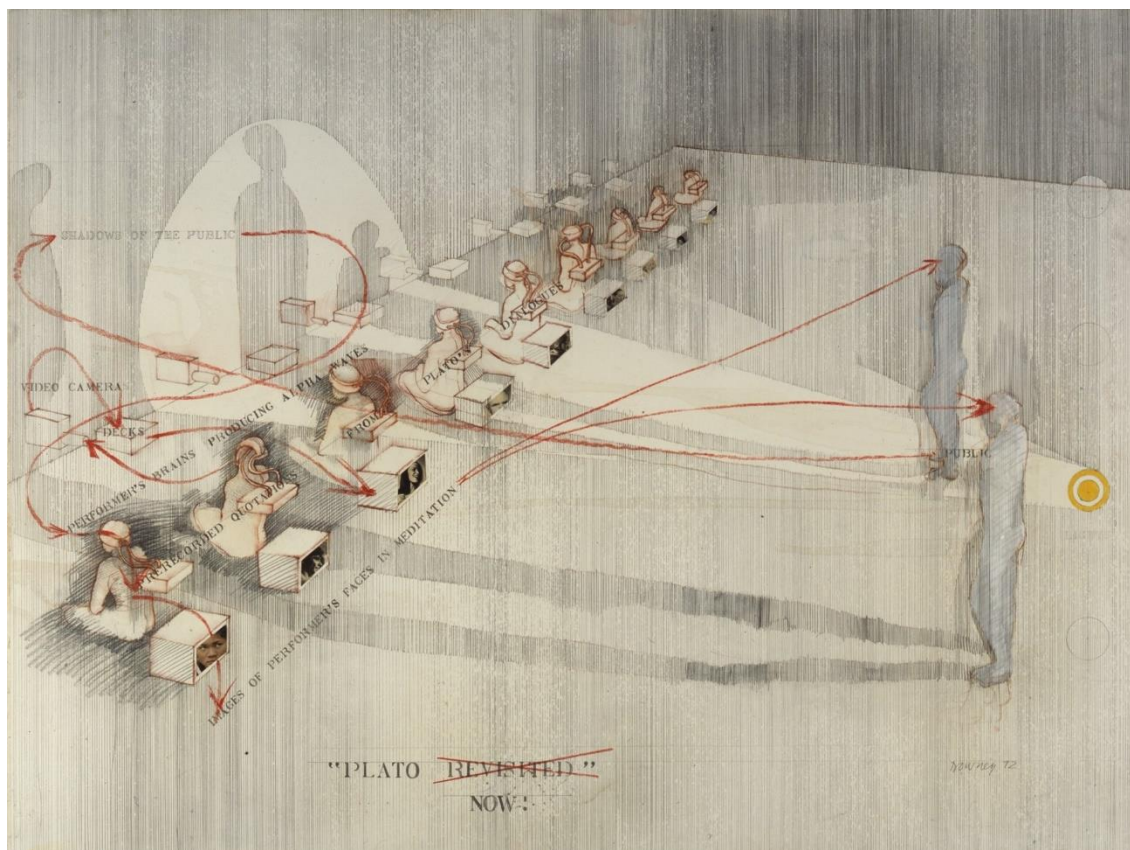


Figure 6

*Invisible Architecture, Inc.*, 1971

graphite, ink, and acrylic on Bainbridge Board

49 5/8 x 39 1/2 in.

Collection: Smithsonian American Art Museum, Washington D.C.

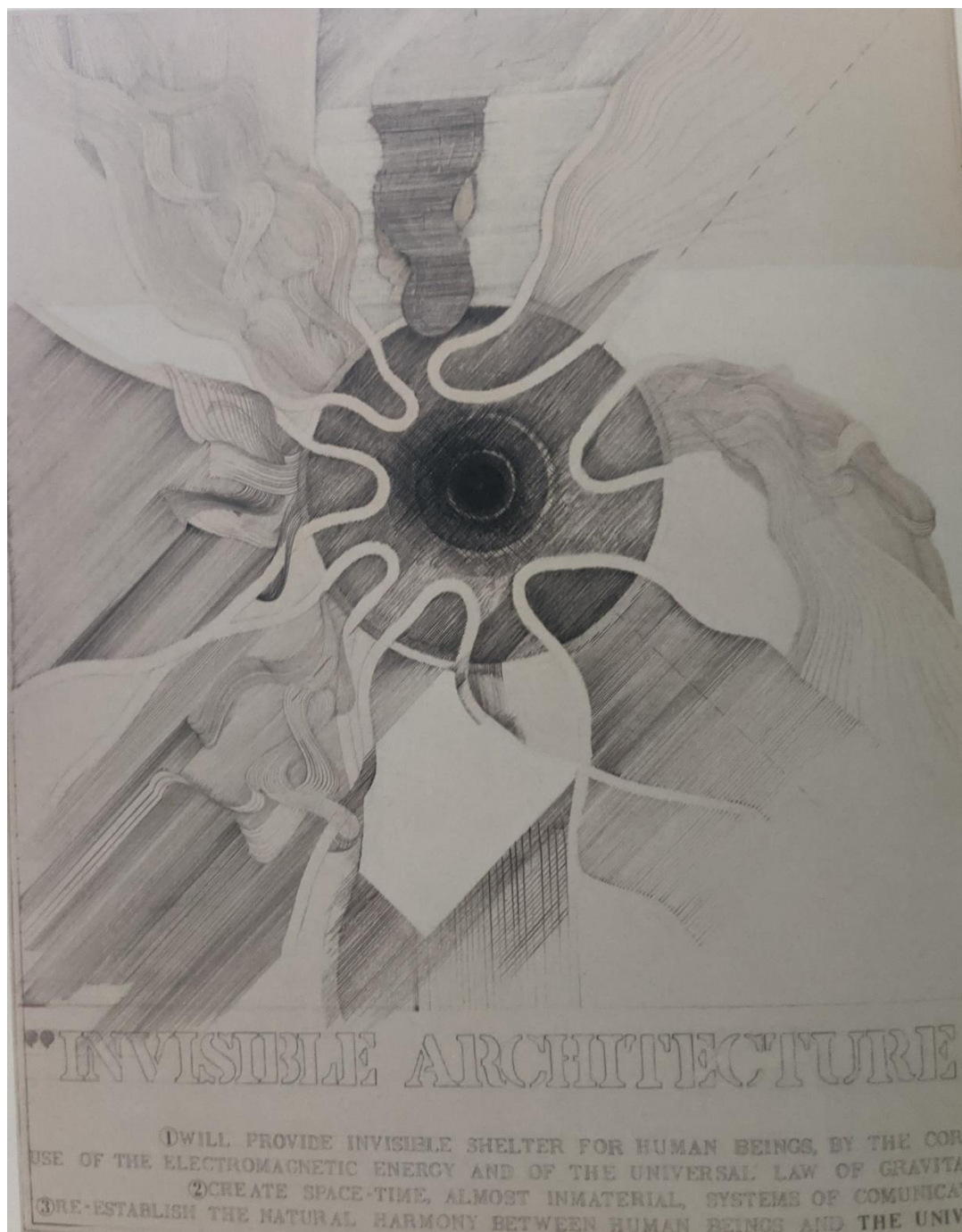




Figure 7

*Invisible Energy Dictates a Dance Concert*, 1969

Performed at Smithsonian Institution, Washington D.C., August 11, 1969; and Cinematheque, New York City, New York, 1970

Performers: Carmen Beuchat, Kitty Duane, Ana Maria Fuensalida, Victoria Larrain, Titi Lamadrid, Gabriela Figueroa.

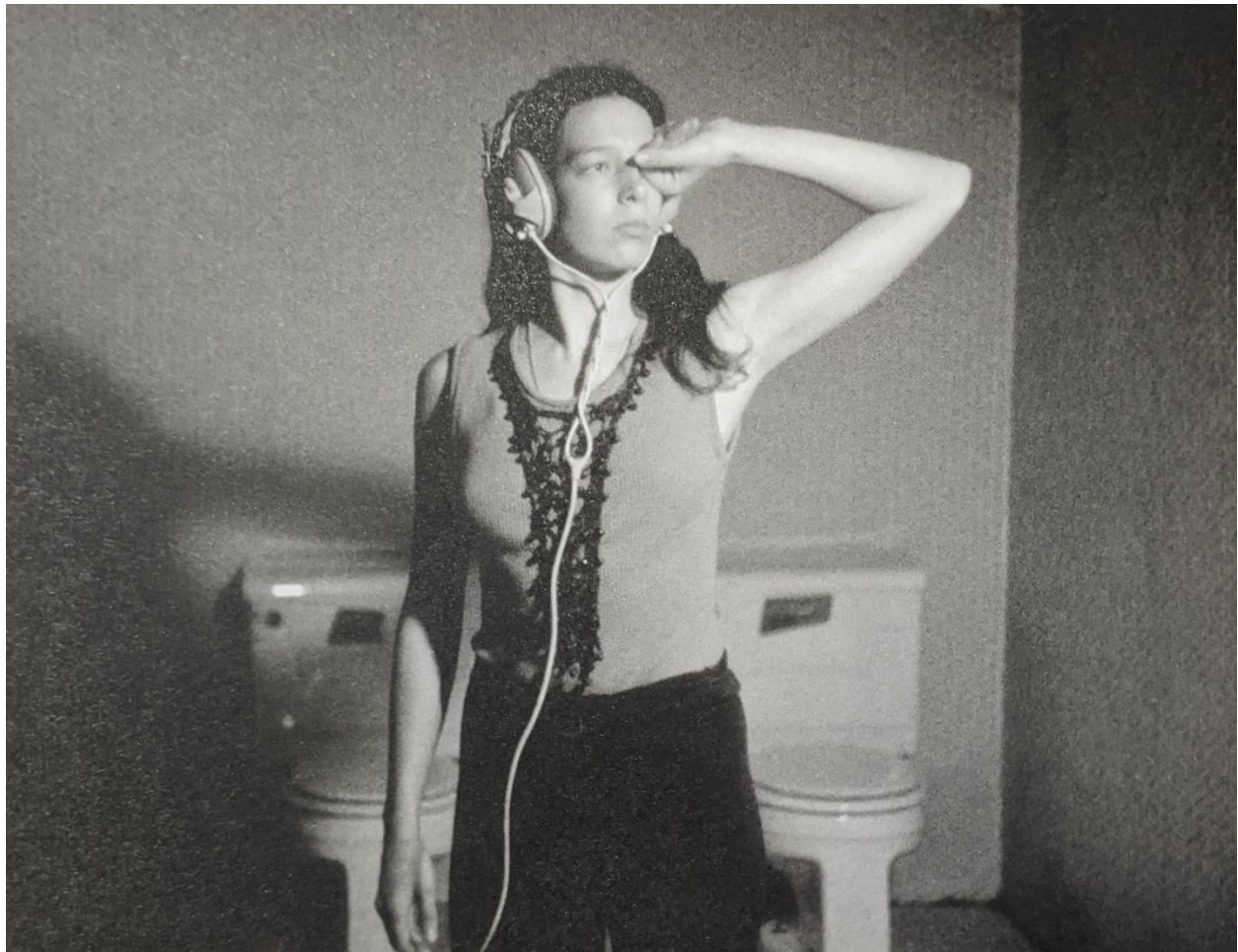




Figure 8  
*Tremors*, 1970  
Plywood, seismometer, vibrator  
dimensions unknown, destroyed.



Figure 8a  
*Tremors* (drawing)  
 graphite and colored pencil on paper  
 22 x 30 in  
 Collection: current location unknown.

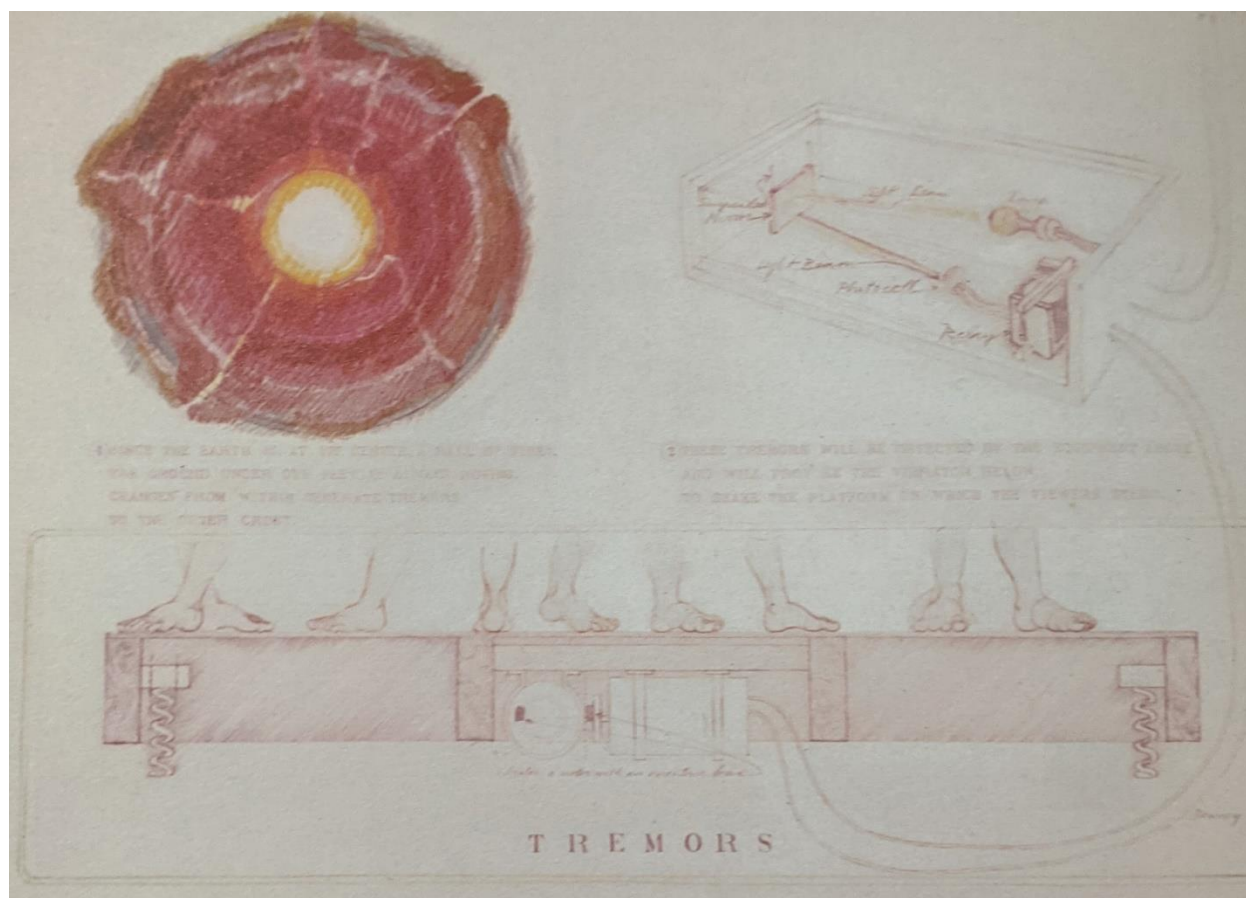


Figure 9

*Energy Fields*

Performed at 112 Greene Street, New York City, New York, February 21, 1972

Performers: Carmen Beuchat, Trisha Brown, Caroline Gooden, Suzanne Harris, Rachel Lew, Barbara Dilley, Gordon Matta Clark, Judith Padow, Penelope and Gerald Schieber.





## Chapter 4

Figure 1

*Clean New Race* (at-home installation view), 1970

Soil, plants, small farm animals

Dimensions variable

Collection: Juan Downey Foundation, New York



Figure 2

*Clean New Race* (drawing), 1970

Graphite, colored pencil, and acrylic on board

36 x 40 in

Collection: Museum of Modern Art, David Rockefeller Latin American Fund

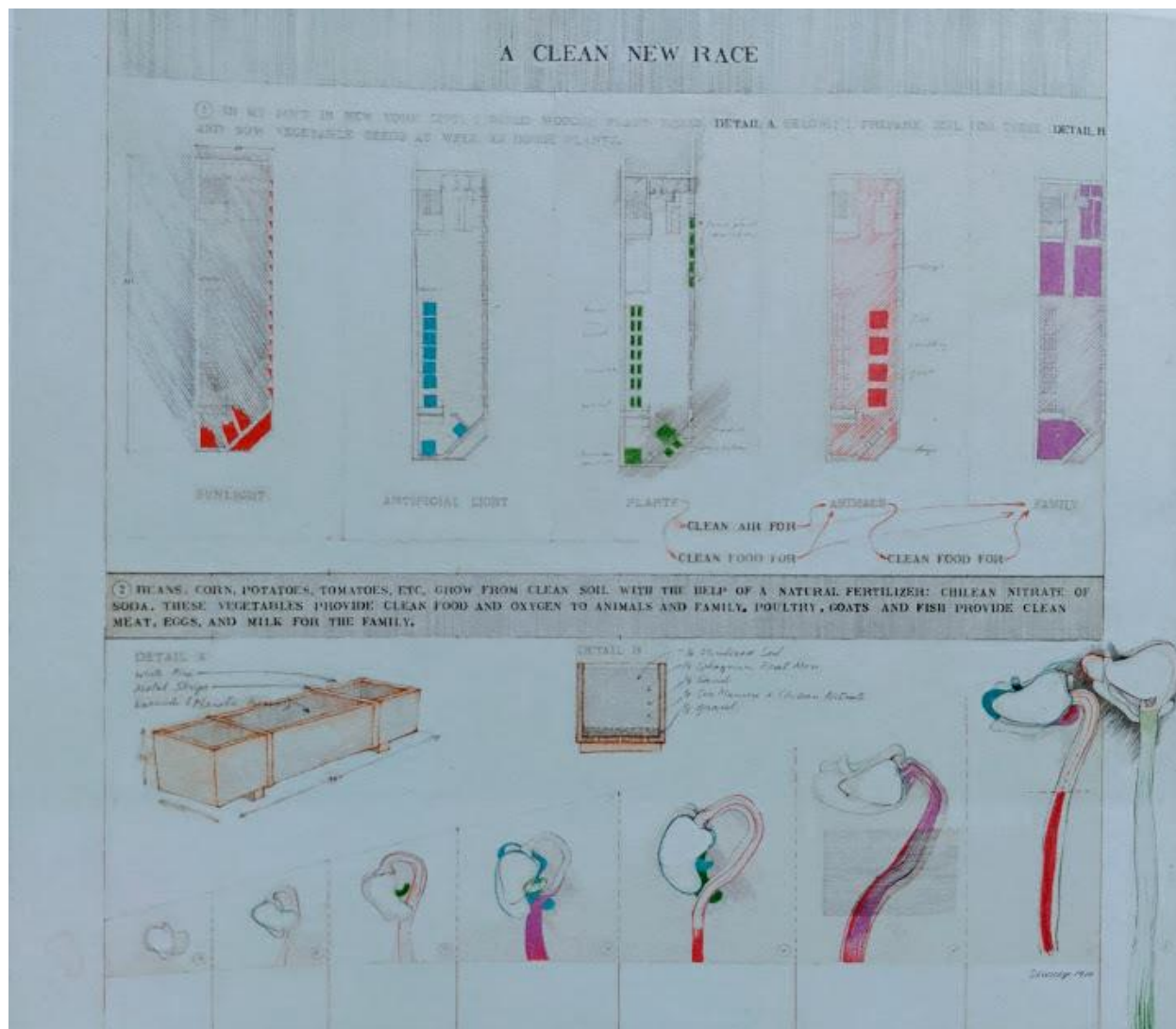


Figure 2a  
*Clean New Race* (drawing), detail

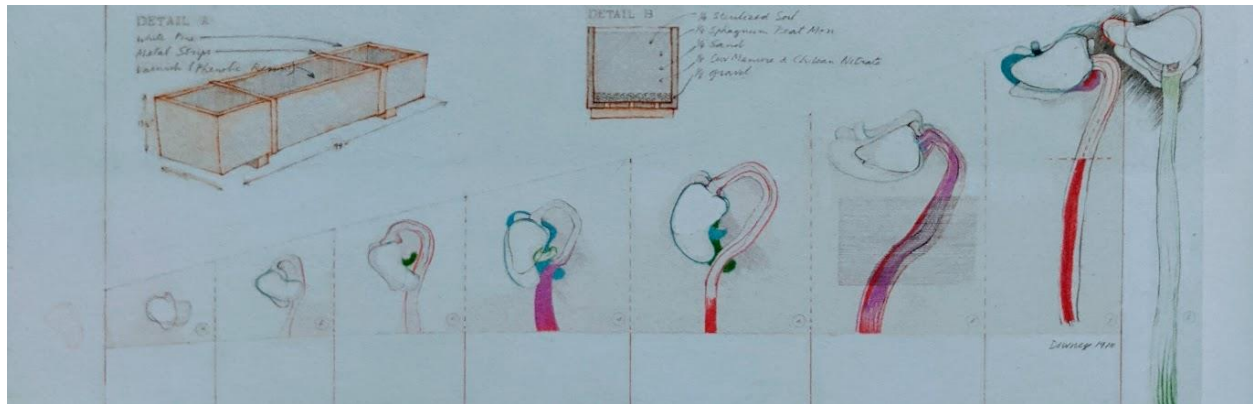


Figure 3

*Chilean Nitrate of Soda Potash*, 1970

Flowerbed, sodium nitrate

Dimensions variable

Collection: Juan Downey Foundation





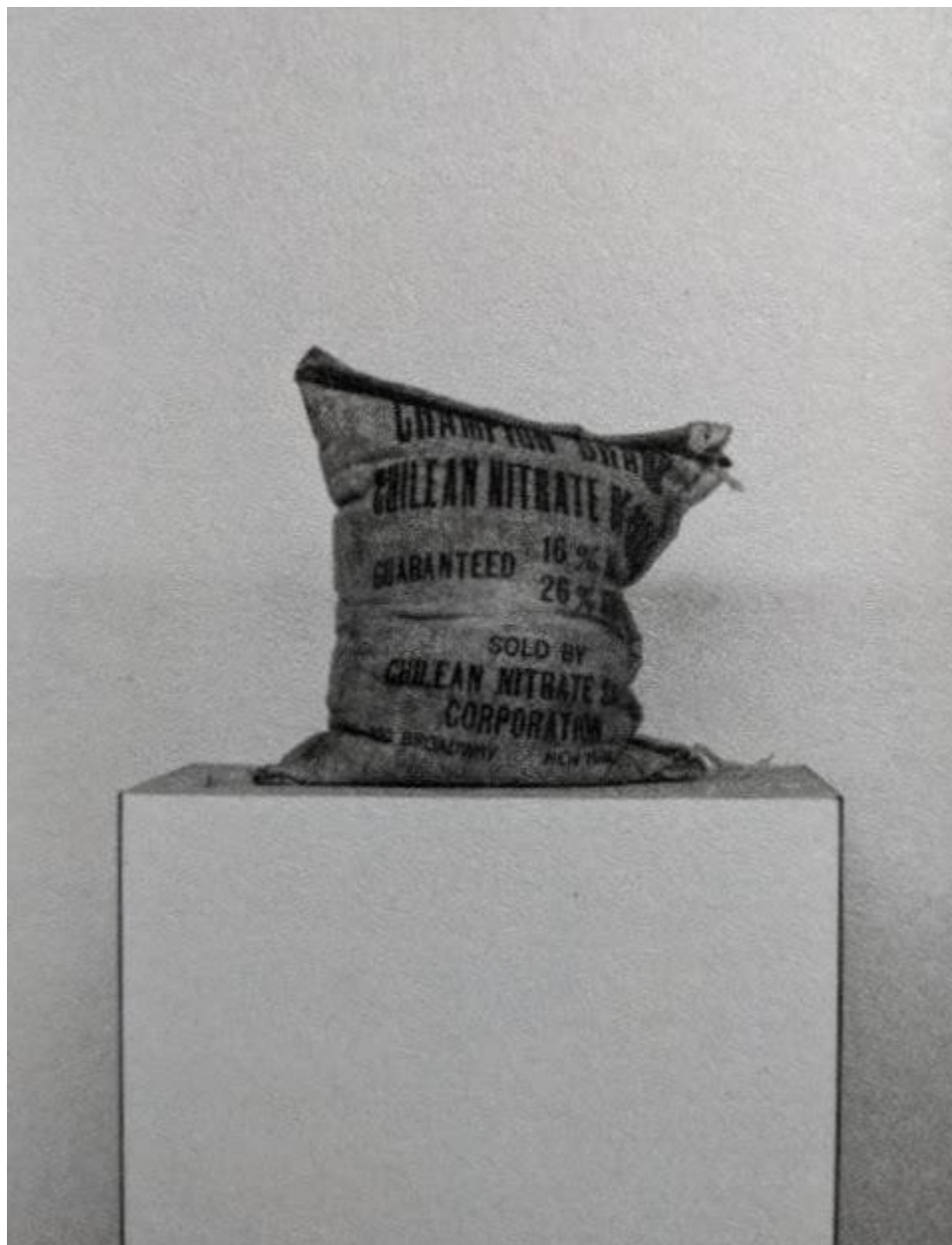
Figure 4

*Make Chile Rich*, 1970

Canvas bag, Chilean nitrate fertilizer, pencil on board, and photographs

Dimensions variable

Collection: Raúl Naón, Lima





*Make Chile Rich (drawing)*

PROMOTION OF THE WORLD WIDE USE OF A  
NATURAL FERTILIZER.

MOST OF THE FOOD WE EAT IS PARTLY THE  
RESULT OF ARTIFICIAL FERTILIZERS. THESE HAVE  
PROVEN TO BE, IN THE LONG RUN, HARMFUL TO  
ANIMALS, MANKIND, PLANTS, SOIL; AND EVEN FATAL  
TO SOME SPECIES.

THE NITRATE FROM CHILE IS A TOP QUALITY  
NATURAL FERTILIZER WIDELY AND WORLDWIDE USED  
UNTIL THE BEGINNING OF THIS CENTURY WHEN IT  
WAS SUBSTITUTED BY ARTIFICIAL FERTILIZERS.



FERTILIZED WITH AMERICAN NITROGEN



FERTILIZED WITH CHILEAN NITRATE OF SODA POTASH

"Make Chile rich" | L. W. Gray

Figure 5

*Yucatán*, 1973-76

Single-channel video, black and white, sound, 28:09 minutes

Reel-to-reel videotape, U Matic ¾ in, Beta SP, D2, digitized, remastered

Engineer: Juanfi Lamadrid

Remasterization: Maurice Shecter

Collection: Juan Downey Foundation, New York

Courtesy of Electronic Arts Intermix, New York



Figure 6a & 6b

*Zapoteca*, 1973

Single-channel video, black and white, sound, 27:35 minutes

Reel-to-reel videotape, U Matic ¾ in, Beta SP, D2, digitized

Engineer: Juanfi Lamadrid

Collection: Juan Downey Foundation, New York

Courtesy of Electronic Arts Intermix, New York

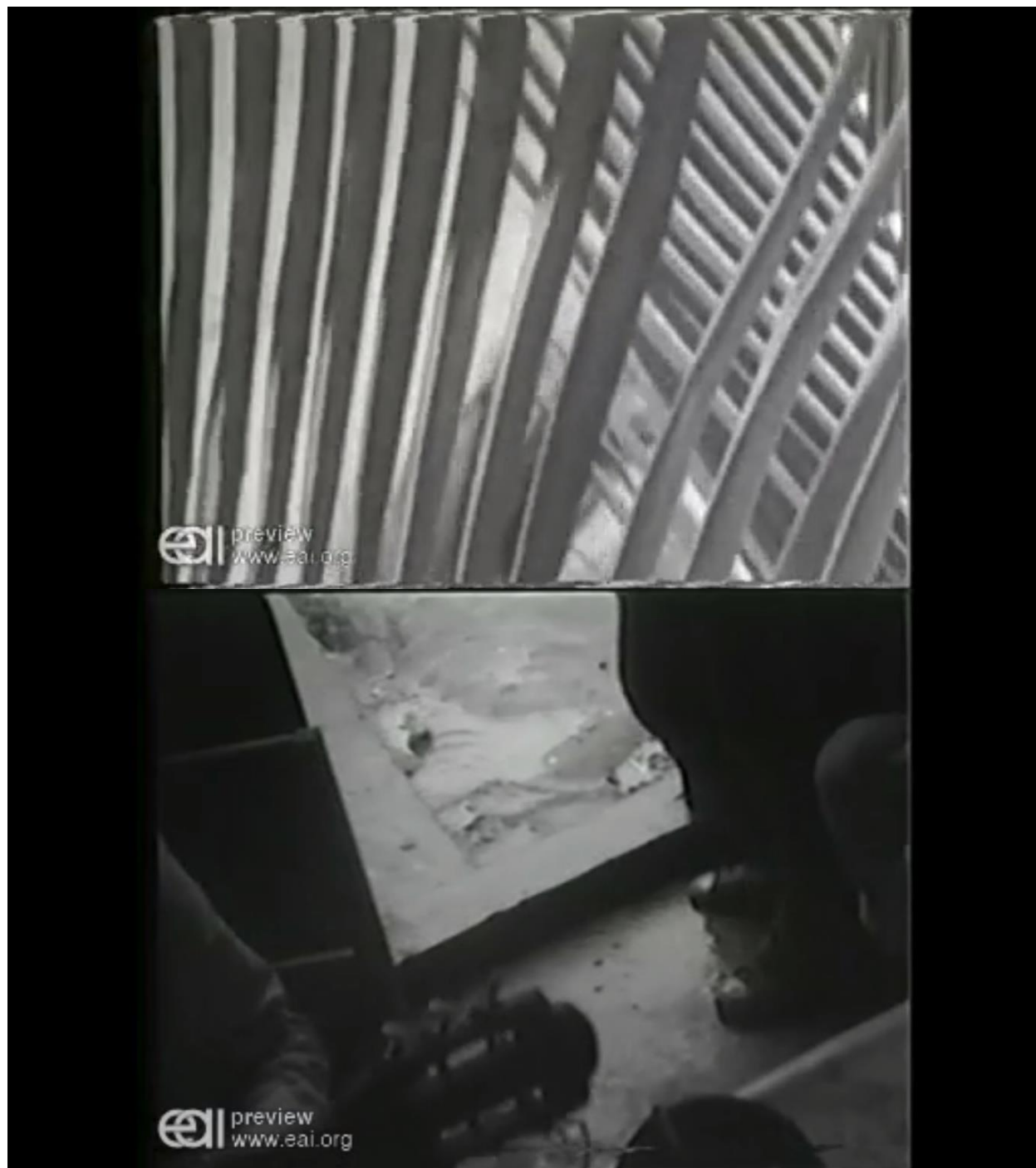


Figure 7

*Guahibos*, 1976

Single-channel video, color, sound, 25:10 minutes

Reel-to-reel videotape, U Matic ¾ in, Beta SP, D2, digitized

Collection: Juan Downey Foundation, New York; Marquand Library, Princeton University, Princeton

Courtesy of Electronic Arts Intermix, New York



Figure 8

*The Laughing Alligator*, 1977-79

Single-channel video, color, sound, 27:00 minutes

Reel-to-reel videotape, U Matic  $\frac{3}{4}$  in, Beta SP, D2, digitized

Field assistant: Marilys Downey, Titi Lamadrid

Edited with the assistance of John Trayna at Electronic Arts Intermix with the support of the Rockefeller Foundation and the National Endowment for the Arts

Collection: Juan Downey Foundation, New York; Marquand Library, Princeton University, Princeton

Courtesy of Electronic Arts Intermix, New York

Figure 8a



Figure 8b



Figure 8c





Figure 9  
Untitled, 1977  
From the series *Meditations*  
Graphite and colored pencil on paper  
11 x 15 in  
Collection: Juan Downey Foundation

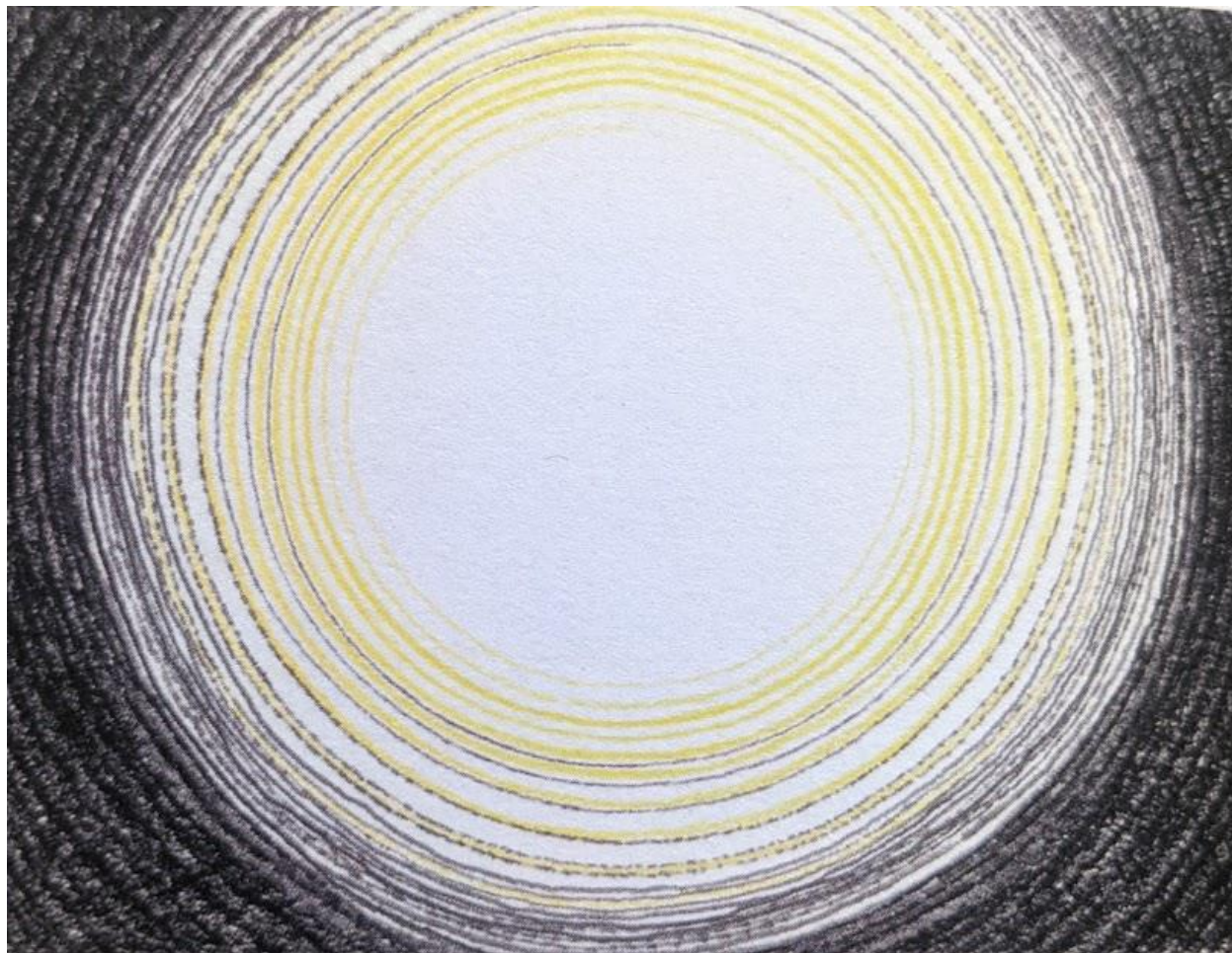


Figure 10  
*Cosmologia* (Cosmology), 1977  
From the series *Meditations*  
Graphite on paper  
11 x 15 in  
Collection: Juan Downey Foundation

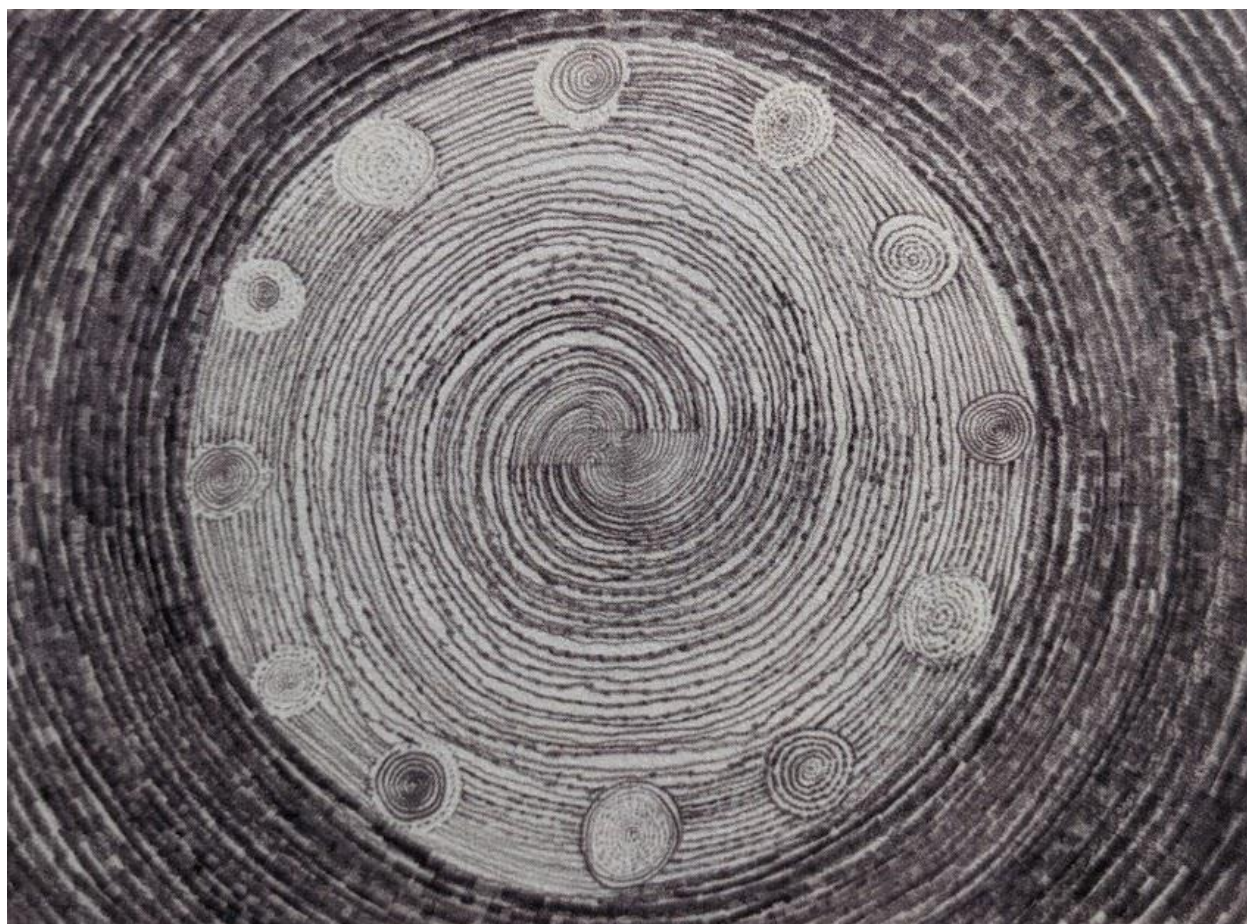




Figure 11

*Anaconda Map of Chile*, 1973

Live anaconda, wood, water receptacle, ink on paper and Plexiglas

86 x 66 x 17 in

Collection: Juan Yarur Torres, Fundación AMA



Chapter 5

Figure 1

*Untitled*, 1980

From the Series *Venus*

Colored Pencil and graphite on paper

22 x 29 ¼ in

Collection: Juan Downey Foundation, New York City





Figure 2  
Selection from *Mediation Series* (All Untitled), 1977  
Graphite and Colored Pencil on paper  
Dimensions variable  
Collection: Juan Downey Foundation, New York

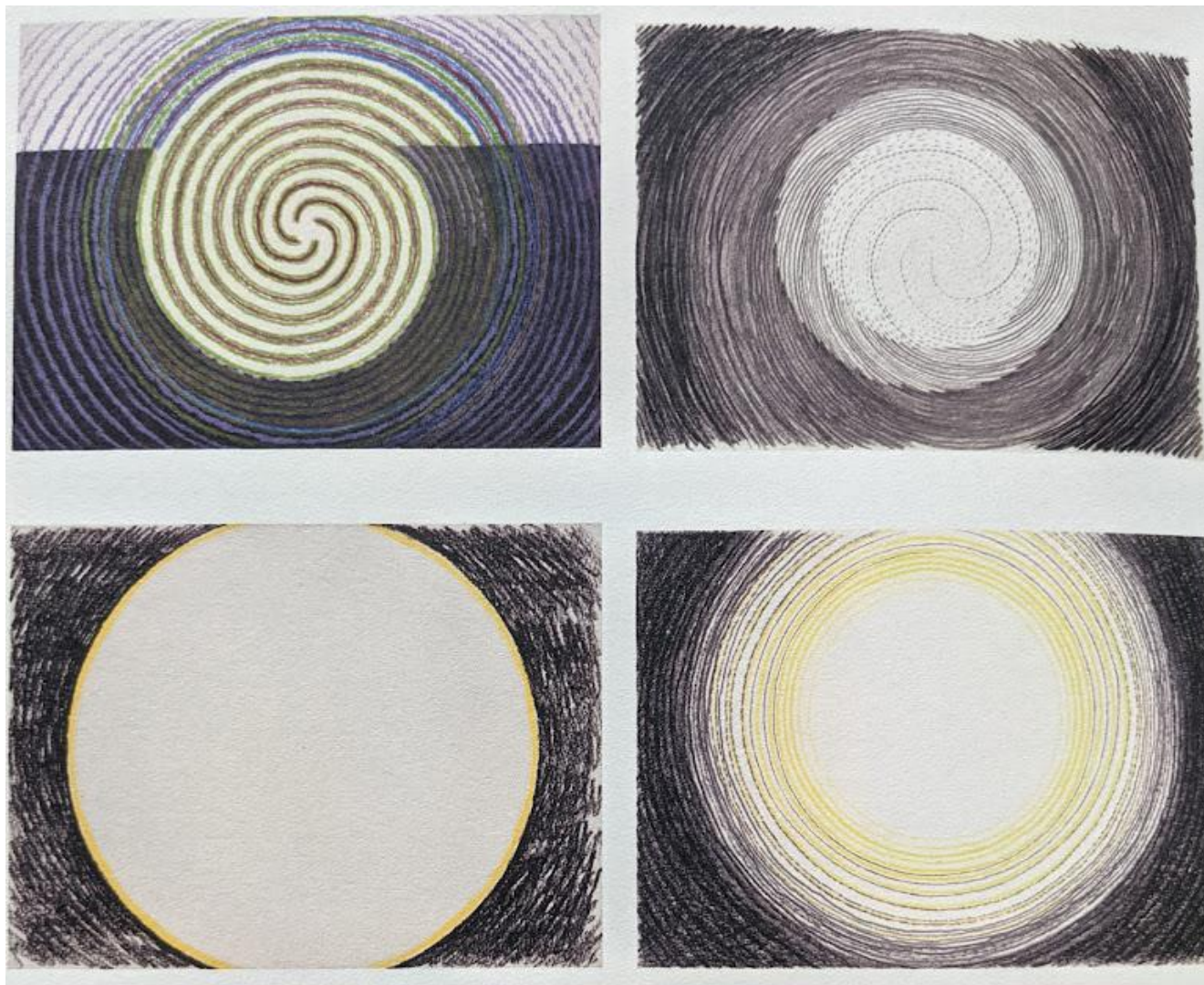


Figure 3

Patterns of Lines of Force Produced by Faraday, about 1852

<https://www.jstor.org/stable/community.26233912>





Figure 4

Reproduction of Lines of Magnetic Force

Printed in Michael Faraday, *Experimental Researches in Electricity: Vol. 3, 1849-1855*,

Universite Paris Sud, accessed October 5, 2021,

<https://gallica.bnf.fr/ark:/12148/bpt6k948856/f15.item.zoom#>

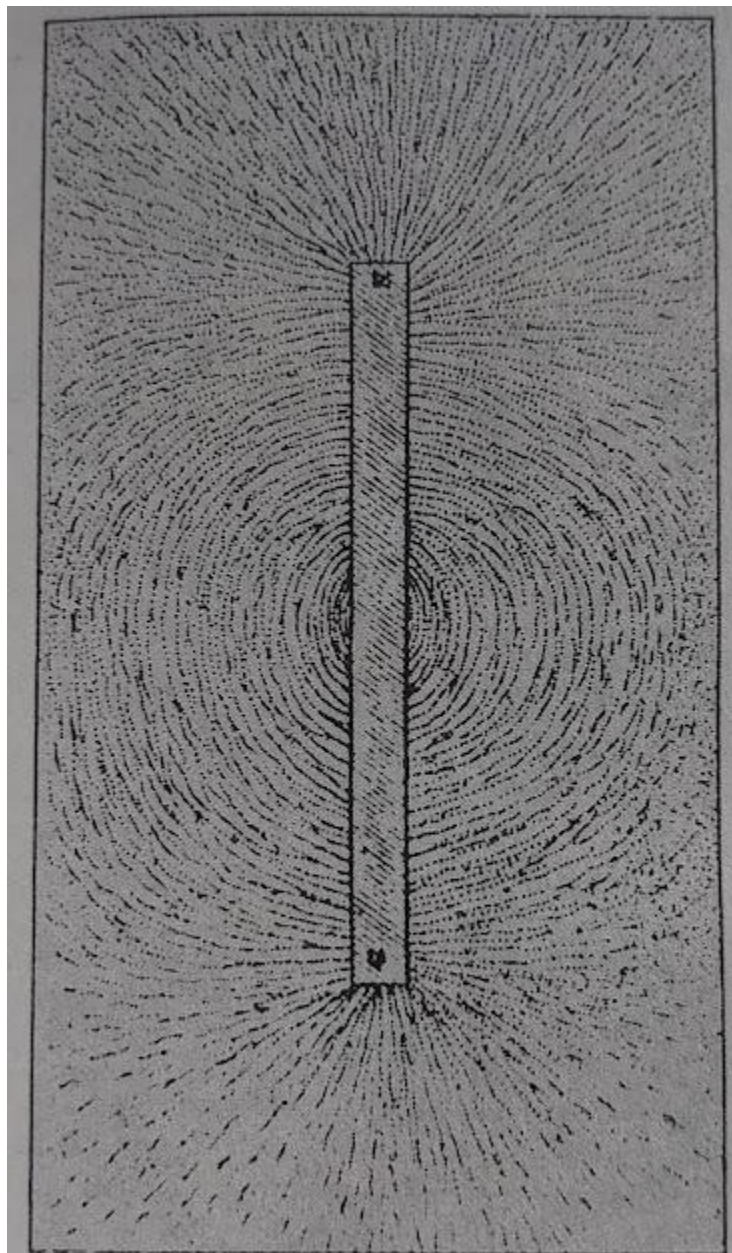


Figure 5  
*Untitled*, 1979  
From the series *Venus*  
Graphite and Colored Pencil on Paper  
22 x 29 1/4 in  
Collection: Private Collection

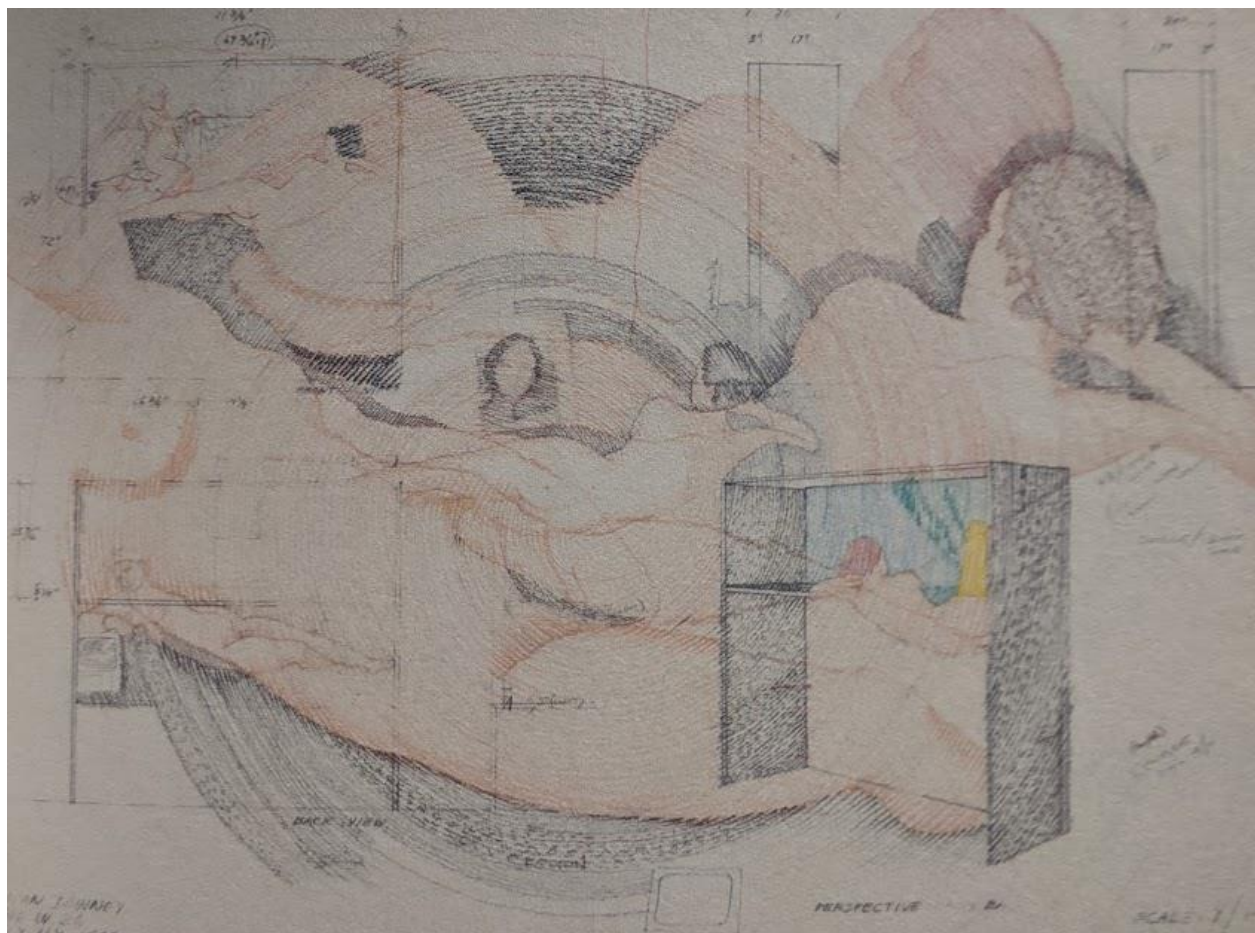


Figure 5a

*Venus and her Mirror*

Monitor, single-channel video, black-and-white reproduction of Diego Velázquez' *The Rokeby Venus*

Dimensions variable

Collection: Juan Downey Foundation





Figure 6  
*Mirror/Venus*, 1980  
Colored Pencil, graphite, acrylic, and collage on paper  
22 ½ x 30 in  
Collection: Juan Downey Foundation, New York

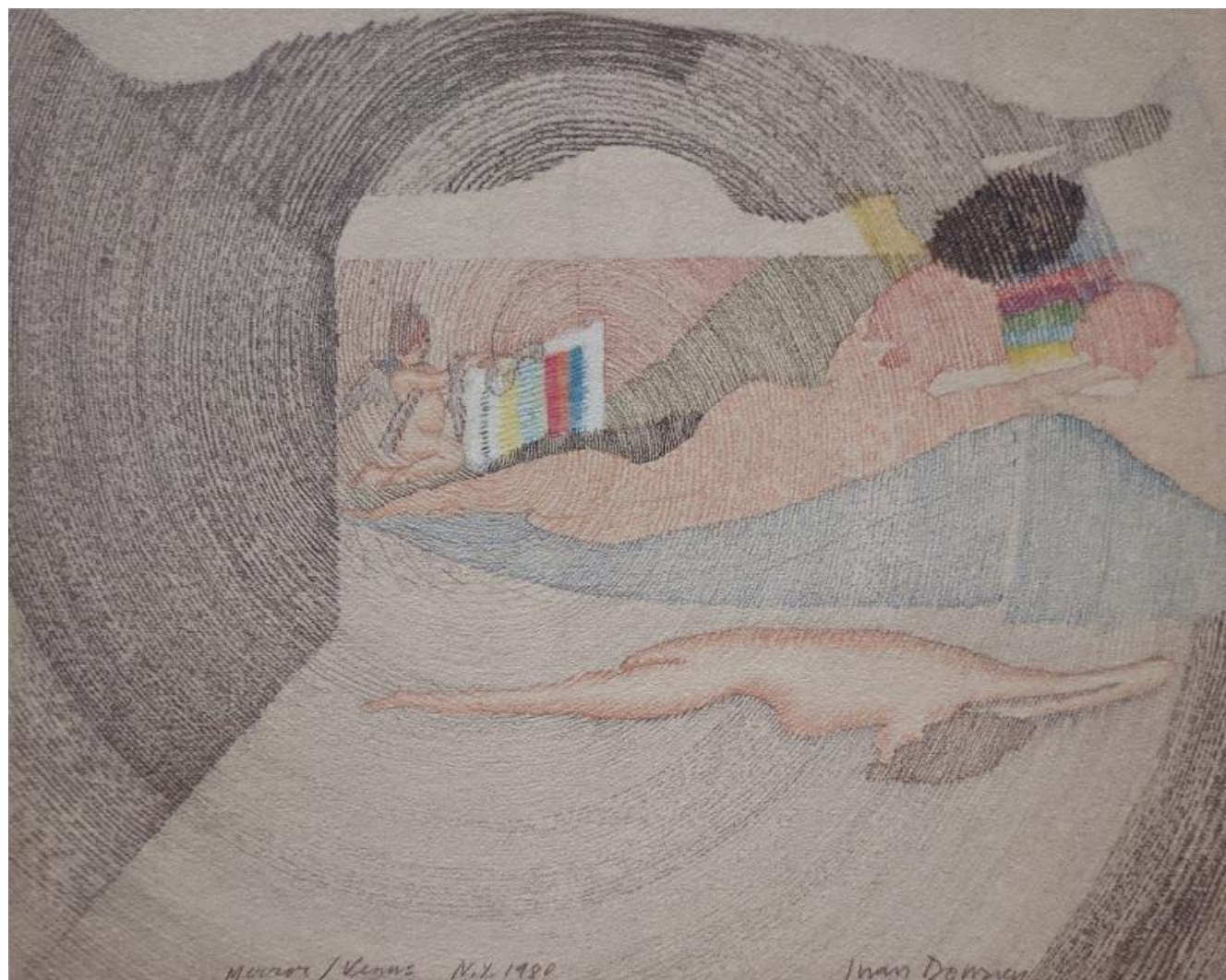




Figure 6a  
Detail of *Mirror/Venus*

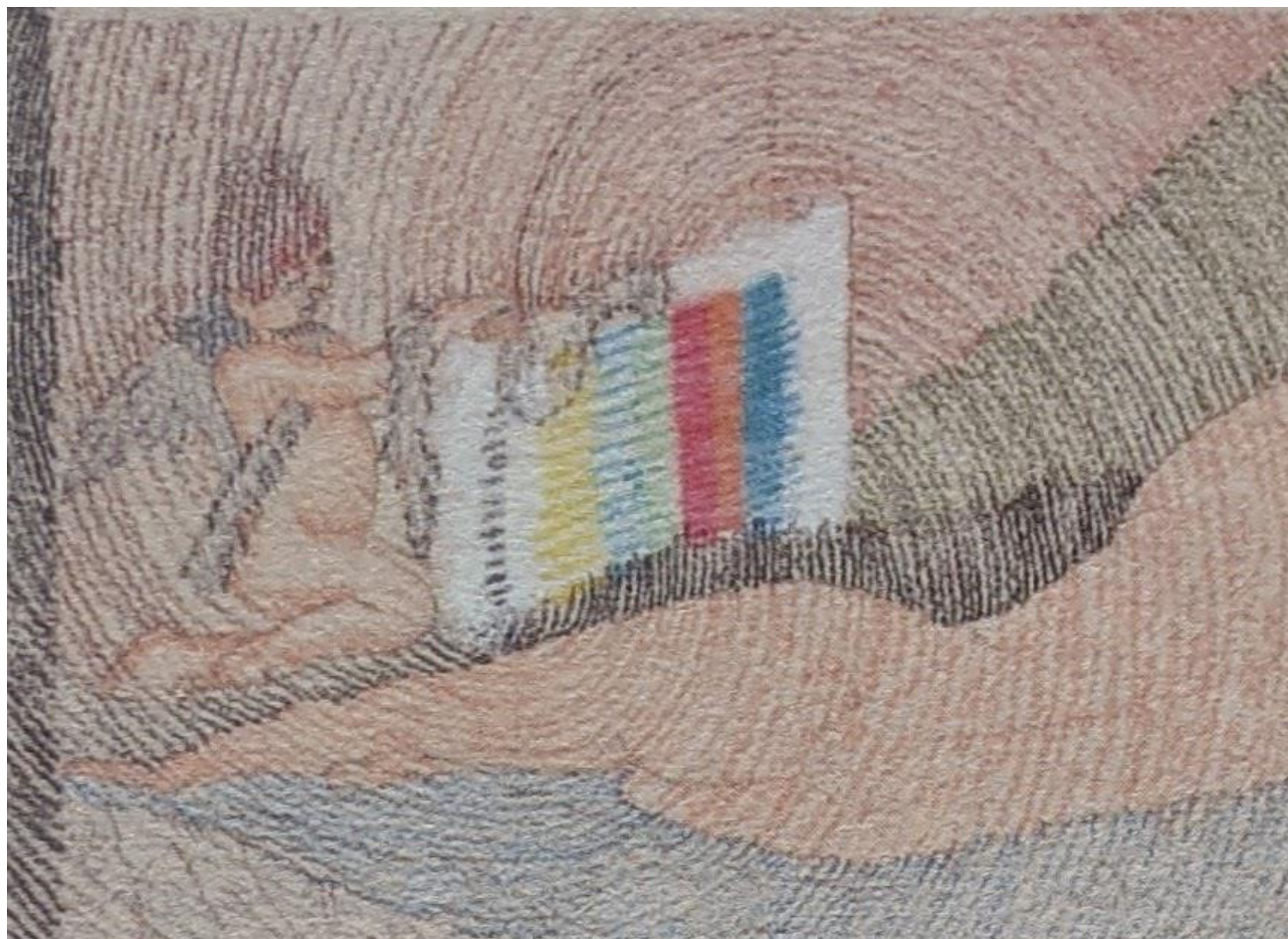


Figure 7

NTSC Standard Television Test Card

Source: [https://en.wikipedia.org/wiki/Test\\_card#/media/File:SMPTE\\_Color\\_Bars.svg](https://en.wikipedia.org/wiki/Test_card#/media/File:SMPTE_Color_Bars.svg)

Figure 8

*Colors Organized According to its Electromagnetic Frequency*, 1975

Graphite and colored pencil on paper

40 ½ x 27 ¼ in

Collection: Juan Downey Foundation, New York





Figure 9  
*Leo's Triangles*, 1981  
Graphite and colored pencil on paper  
22 x 30 in  
Collection: Juan Downey Foundation



Figure 10  
*Untitled*, 1981  
Graphite and colored pencil on paper  
22 x 30 in  
Collection: Juan Downey Foundation

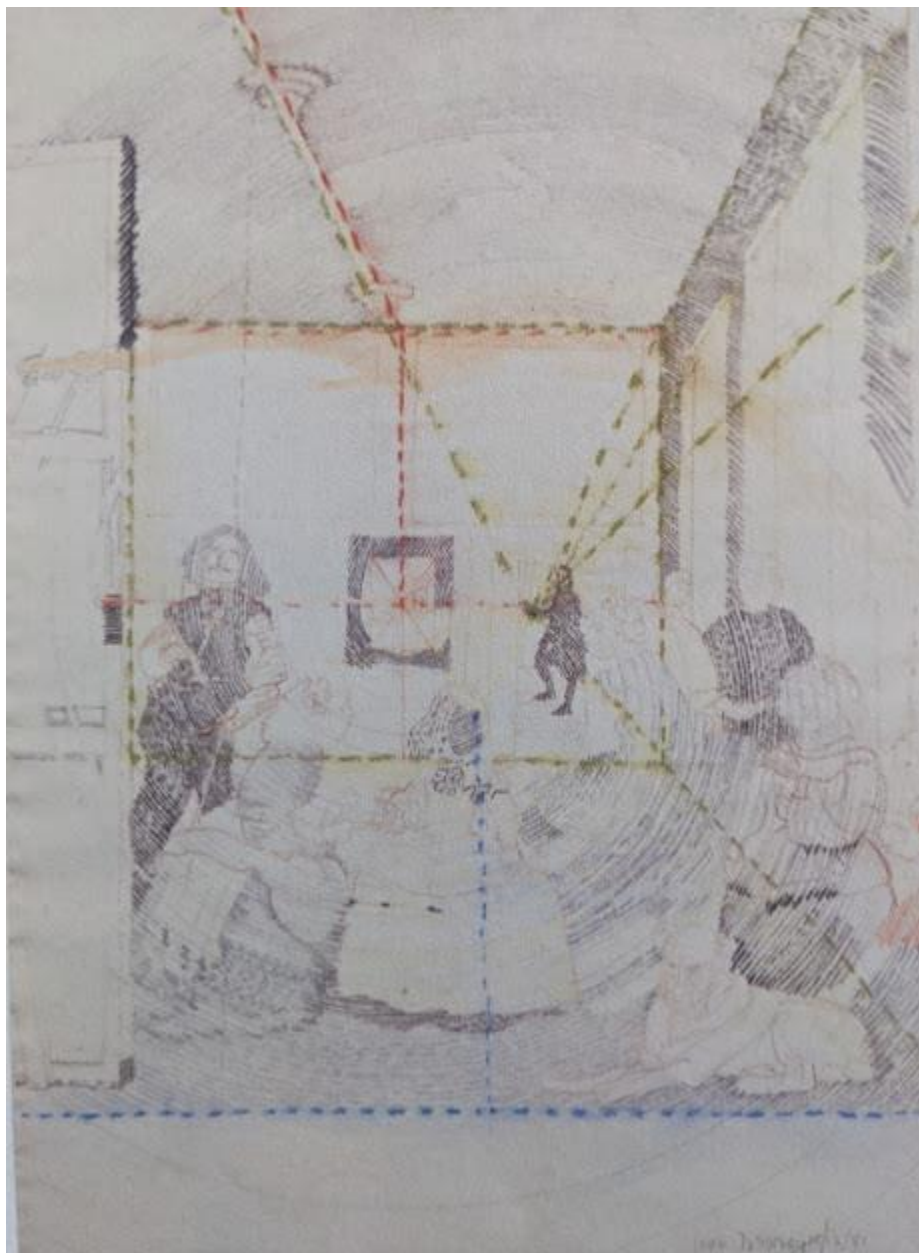


Figure 11  
Video graphic from *The Looking Glass*, 1981

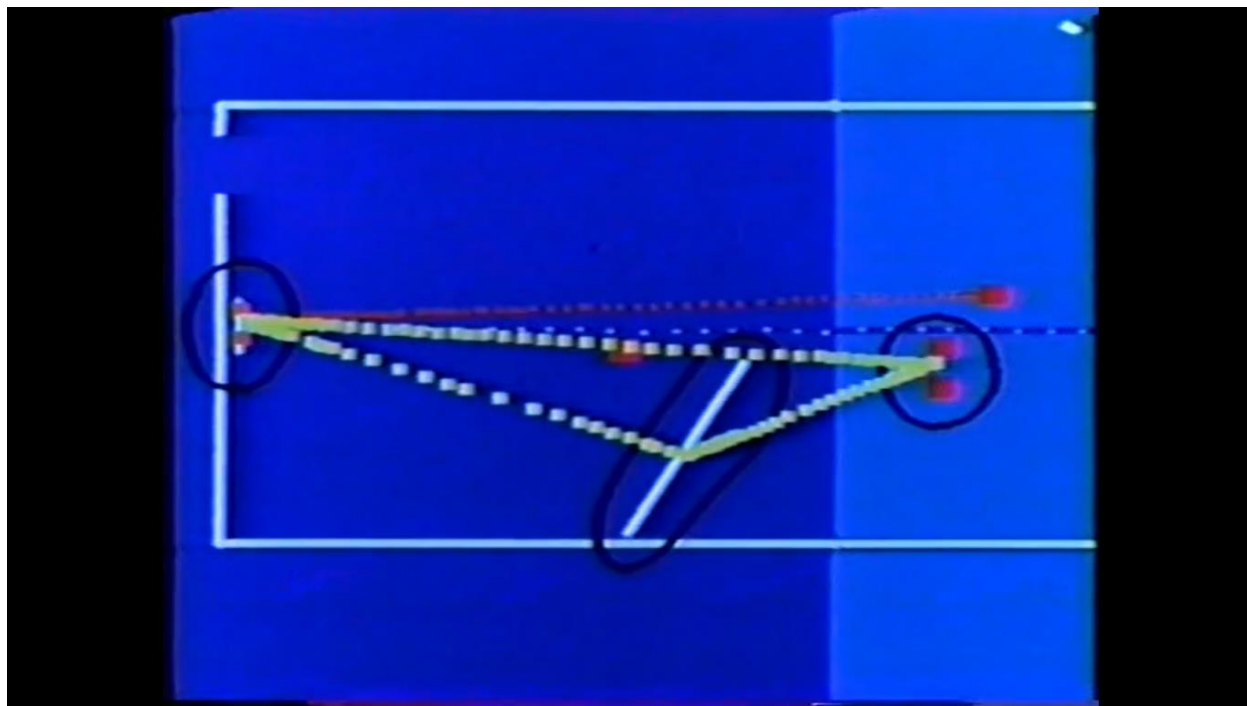


Figure 12 (below)  
*Untitled*, ca. 1982  
Graphite and colored pencil on paper  
60 x 40 in  
Collection: Juan Downey Foundation, New York

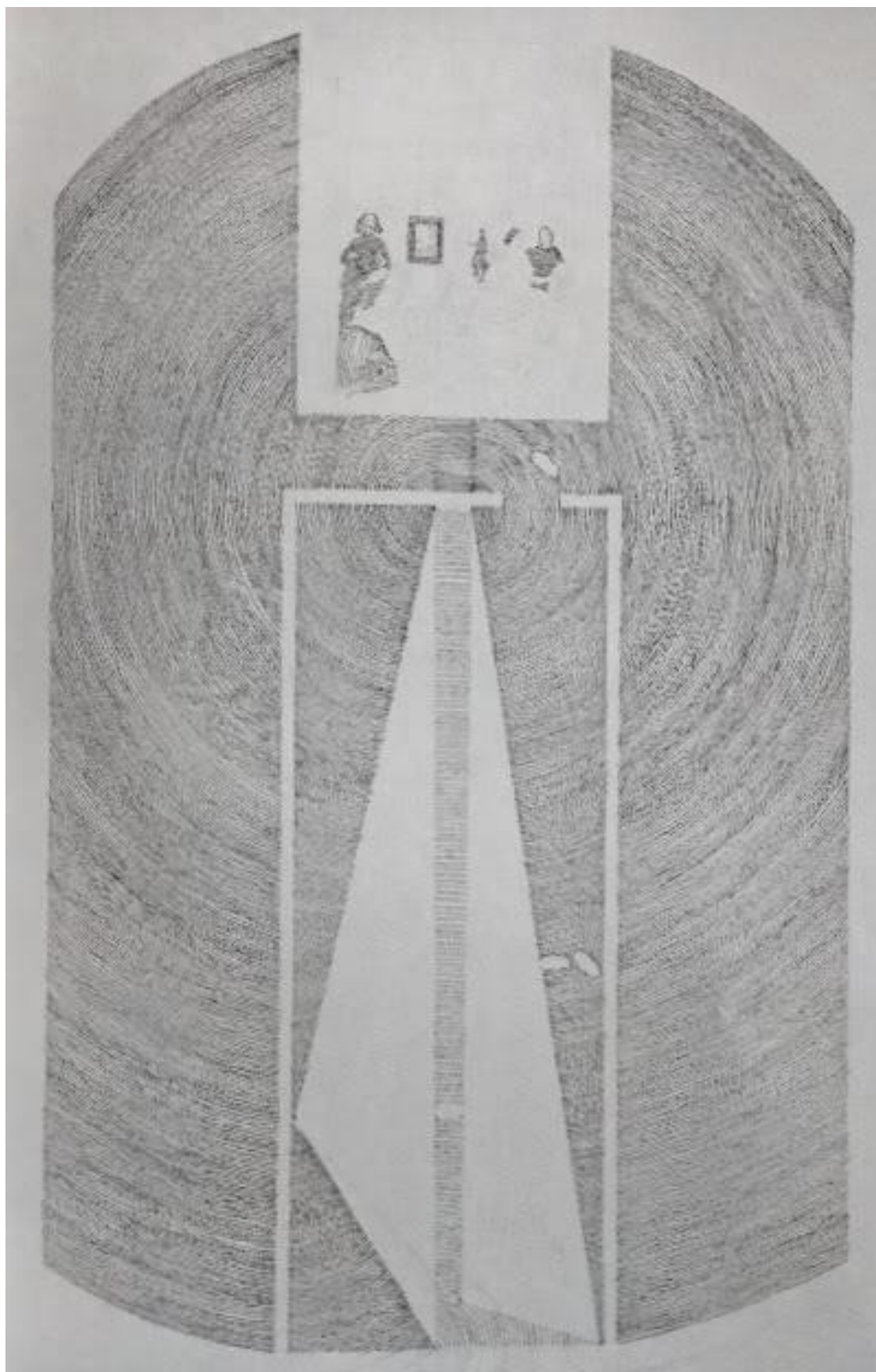
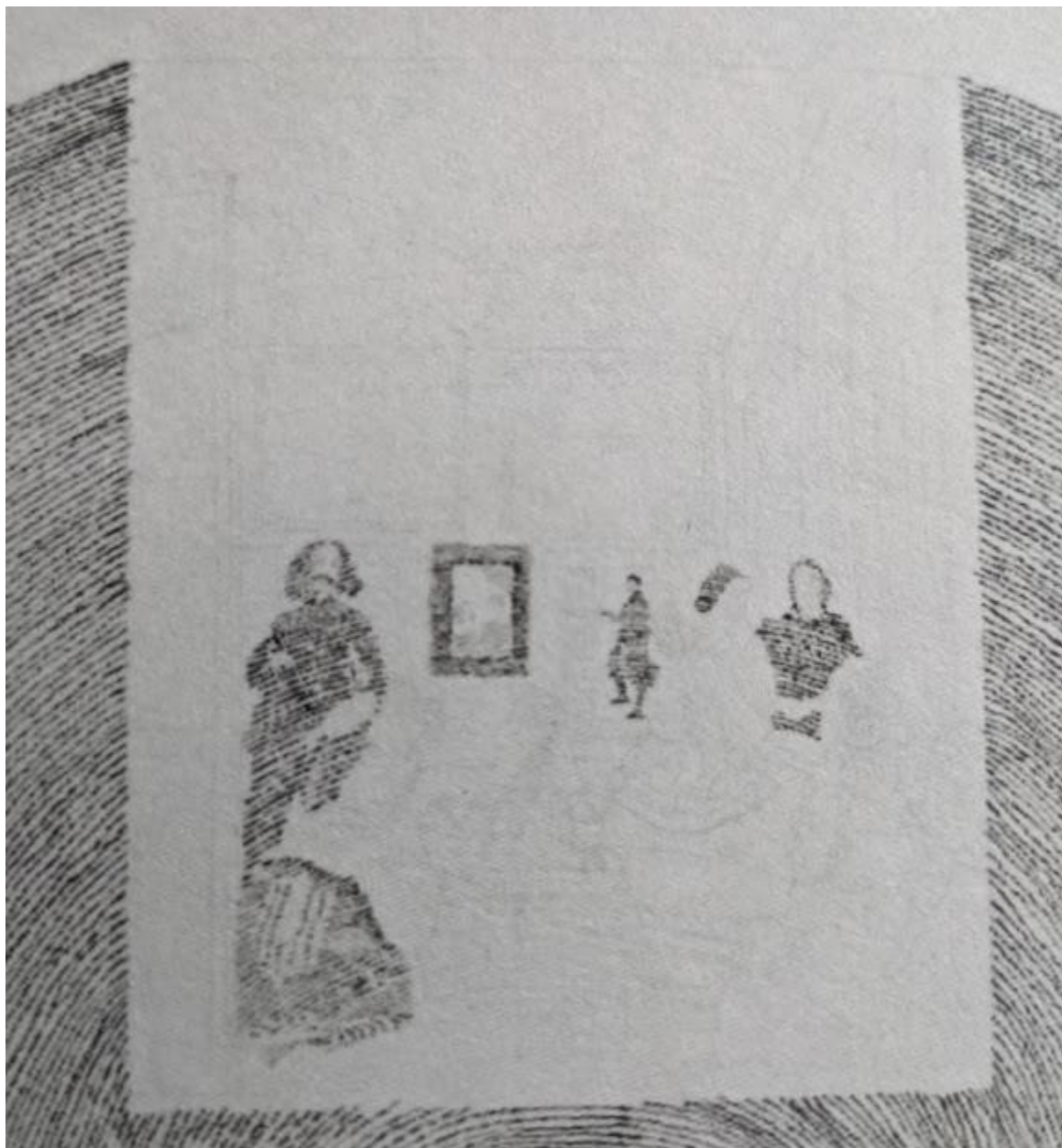




Figure 12a  
Detail of *Untitled*, ca. 1982





## Conclusion

Figure 1

*Invisible Energy Plays a Concert in New York, 1969*

Graphite and colored pencil on paper

50 x 40 in

Collection: Galería Aninat, Santiago, Chile

