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THE MYTH OF ENVIRONMENTAL SUSTAINABILITY –
PROBLEMS FOR CONTEMPORARY ARTISTS

Patrizia Biondi

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Statement of Intent

A thesis submitted in partial requirements for the degree of Doctor of Philosophy.

This is to certify that the content of this thesis is my own work. This thesis has not been submitted for any other degree or purpose.

I certify that the intellectual content of this thesis is the product of my own work, and that all assistance received in preparing this thesis and all sources have been acknowledged.

Patrizia Biondi

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ABSTRACT

In response to the climate crisis, it can be compelling for artists to place environmental concerns at the centre of their practice. This premise leads to the core question of this project: Can environmental art be an effective form of activism? Like all political art, environmental art is beset by problems and contradictions that are both logical and ethical. Such issues arise because, despite the Duchampian idea that anything can be art, activism and art engage with political problems in different ways. Art relies on ambiguity and affect, while activism demands clarity and action. The conflation of the two can turn art into propaganda or reduce activism to a symbolic, aesthetic gesture. Paradoxically, as art relies on symbols and metaphors to make power visible and open to critique, it can inadvertently reproduce its logic. The question of whether art can be an effective form of activism becomes all the more relevant, given that art embodies the material conditions of its time. As such, it inevitably reflects the same structural forces, contradictions and limitations that constrain activism. Within neoliberal frameworks, the commodification of both nature and sustainability itself are but some of the issues and contradictions that activism, and therefore art, must contend with. In short, art cannot transcend the structures in which it exists and that it seeks to address. There are no resolutions to these tensions, only artistic processes that lead to stronger or weaker outcomes. This project is an exploration of such processes and outcomes, not to critique environmental art but to examine the nuances that challenge its practice.

The studio component consists of three bodies of work. They are all made from salvaged materials, based on the central premise that waste lies at the heart of the climate crisis. The works in the first series, *It's a Circus Out There*, are wall sculptures made with packaging cardboard that is painted, cut into strips, and assembled into intricate constructions that evoke architectural structures. The recovery of resources challenges the structural capitalist principle of private property. The works in the second series, *Click Here to Reset Your Password*, consist of cardboard packaging arranged in carefully designed layers within a timber frame to epitomise how framing shapes public perception. The works in the third series, *Il Pretesto*, are made with vibrantly coloured paper pulp that entombs assemblages of salvaged waste, such as shoeboxes and PVC pipes, while leaving other materials exposed. The works highlight how dominant ideologies govern what is concealed and what is visible.

INTRODUCTION

For contemporary artists who wish to centre their practice on environmental concerns and position their work as a form of activism, there must be a full awareness that such an endeavour is fraught from the outset. The articulation of political ideas through aesthetic form often encounters challenges that are intractable and can limit art's ability to catalyse concrete action. Such a premise leads to the question of whether art can be an effective form of environmental activism. Like all political art, environmental art is riddled with contradictions, both logical and ethical. This is because activism and art address political issues in vastly different ways. To insist on such a distinction is neither semantic quibbling nor a discussion about what art is. Instead, it is critical to establish what is at stake in art practice and political action in order to understand why their conflation can be ineffective. Art engages the viewer through allusion, ambiguity and emotional resonance, while activism relies on clarity, immediacy and tangible outcomes. Art does not require a unified intent, direct action or resolution; instead, it invites reflection, interpretation and awareness.¹ Activism, by contrast, seeks to mobilise, persuade and effect political change. The conflation of the two can result in artwork with an overt political message, which could turn art into propaganda or activism into tokenism.² In either case, an urgent call can become an easily consumable, depoliticised gesture.

Environmental artists also face the task of holding aesthetic and political content in critical tension. If the work prioritises the aesthetic form, it preserves the sensory qualities that engage viewers on a more affective level but detaches the problems from their material context.³ As a result, urgent ecological issues are reduced to items of mere contemplation, which diminishes the resolve to act – action is, after all, the very aim of activism. If the political content is too direct, the work becomes didactic and loses the poetic or immersive power that makes art engaging and compelling. These tensions are part of a broader set of cultural, structural and ideological challenges that undermine art as a form of environmental activism – challenges that will be explored throughout this project.

¹ Theodor W. Adorno, "Commitment," *New Left Review* 87/88 (1974): 75–89.

² Adorno, 78.

³ György Lukács, "Realism in the Balance," in *Aesthetics and Politics*, ed. Fredric Jameson (London: Verso, 2007), 28–59.

The challenge of making art function as a form of environmental activism is a contemporary concern, gaining urgency since environmental issues entered public discourse in the 1960s.⁴ However, the roots of this challenge lie in the long-standing relationship between art and politics, traceable to the French Revolution, when artistic practice began to align with independent thought and political agency. Up to that turning point, art had primarily functioned to glorify the church, the state and the elite. With this shift, art began to represent the concerns of the people rather than those of power. Since that historical moment, art has continually grappled not only with the ideas it expresses but also with how those ideas take shape aesthetically, particularly in terms of their capacity to effect social and political change.

In addition to the challenges of expressing political concerns through the aesthetic form, art's potential and limitations as a means of environmental activism are also shaped by the material conditions of its time. Like all political art, environmental art is shaped by the modes of production, social relations, class dynamics and ideological frameworks in which it is made.⁵ Within this context, art manifests the world from which it emerges, not simply as an expression of the artist's vision but also in terms of the economic, political and cultural conditions that shape, limit and define how that vision takes form and gains meaning.⁶ As such, in the specific case of environmental art, it is more than just the artist's expression of ecological concerns.⁷ Environmental artworks function as social products that reflect how society understands environmental issues and how society reproduces the power structures that both shape this understanding and contribute to the environmental problems the work seeks to address.

Given that art carries embedded cultural codes and values shaped by the structural conditions in which it emerges, it is never ideologically neutral. Such a lack of neutrality becomes evident when art engages with the ecological crisis, as it must inevitably confront a set of ideological constructs, chief among them the idea of nature itself. Nature is not a fixed or self-evident category; it is a construct shaped through cultural narratives and systems of representation. In practical terms, this means that public discourse surrounding environmental

⁴ John E. Thornes, "A Rough Guide to Environmental Art," *Annual Review of Environment and Resources* 33, no. 1 (2008): 391–411, <https://doi.org/10.1146/annurev.environ.31.042605.134920>.

⁵ Tilak Bahadur Khatri, "Historical Materialist Approach to Literature and Art," *Contemporary Research* 7, no. 1 (2024): 155–170, <https://doi.org/10.3126/craiaj.v7i1.67267>.

⁶ György Lukács, "Art and Objective Truth," in *Critical Theory Since 1965*, ed. Hazard Adams and Leroy Searle (Tallahassee: Florida State University Press, 1986), 789–807.

⁷ Adorno, "Commitment," 78.

issues such as sustainability is shaped by ideological assumptions about what should (or shouldn't) be sustained, for whom and by what means. These decisions are based on constructed notions of nature. For example, if nature is framed as a pristine realm separate from human activity, sustainability efforts might focus on preserving untouched landscapes. As a result, environmental art might engage with aesthetic interpretations of nature as idealised, romantic or nostalgic. In cases where nature is viewed as a resource to be optimised, sustainability becomes a matter of efficient management or technological innovation, and environmental art could adopt an aesthetic that incorporates technology, thus mirroring the very systems it critiques. These are just a few of the many possible ways nature can be framed. This discussion will later examine in depth how these constructs emerged and how, over time, they evolved into enduring myths. Tracing their historical formation reveals that contemporary conceptions of nature and, consequently, of sustainability, are not neutral or inevitable. They stem from specific worldviews that continue to shape environmental discourse and artistic engagement. For now, the examples outlined above suffice to demonstrate how a construct of nature can shape the meaning of sustainability, the approaches taken to achieve it, and how environmental art can unintentionally reproduce these narratives.

Beyond historical constructs of nature, a few additional words are necessary to further clarify the complex conditions that affect both environmental activism in general and environmental art as a form of activism. The current cultural mindset prioritises scientific data and economic metrics as the primary means to address environmental problems. This perspective reduces sustainability to measurable goals, such as lowering carbon emissions, because these targets are easier to communicate, track and politicise. Meanwhile, other critical issues receive far less attention. Fast fashion, for example, is one of the world's most polluting industries, but rarely features at the centre of mainstream sustainability discussions. It is also the case that the emphasis on specific, measurable issues tends to oversimplify sustainability by sidelining its broader social and cultural dimensions. These broader dimensions include racial and social justice, Indigenous knowledge, ethical considerations, welfare support, wealth distribution and mental health. Although such concerns are distinct from the health of ecosystems and the sustainable management of resources, they are deeply interrelated: environmental degradation can exacerbate social and racial inequalities as well as psychological strain, while unjust social systems can also hinder effective ecological responses. Because broader cultural and political contexts shape these social and cultural

dimensions, they are difficult to quantify or evaluate. Nevertheless, they remain important to sustain communities and for informing more inclusive approaches to environmental action.

The example of sustainability as a culturally and ideologically constructed concept highlights a fundamental problem: if structural settings condition the effectiveness of environmental activism in the material world, environmental art must contend with the same settings because it operates within the exact social and structural frameworks.⁸ Any artistic attempt to critique these systems must inevitably draw on symbols and narratives shaped by them. Without a critical focus on the assumptions on which these narratives rest – such as the misconception that sustainability is a universally understood, apolitical, or purely technological issue – environmental art can paradoxically reproduce the very logic it seeks to challenge.

The commodification of nature and of sustainability itself is another structural contradiction that environmental activism, therefore environmental art, must confront. The expectation that sustainable outcomes can be achieved within a deregulated capitalist market is inherently contradictory. This system drives the climate crisis through extractive industries, mass production, overconsumption and inadequate waste management, while profit remains the overriding priority. The result is a fundamental conflict of interest as nature and environmental sustainability are shaped by narratives that prioritise economic agendas. For example, marketing strategies often deploy the rhetoric of the ‘natural’ and the Romantic myth of nature as purity in order to sell the illusion of sustainability to consumers while masking the environmental costs of production and obscuring what is truly at stake in ecological terms.⁹ Marketing appropriates these entrenched constructs of nature to sustain and perpetuate consumption, which in turn maintains production systems and ultimately undermines environmental sustainability. Consequently, environmental activism – including environmental art – is constrained, as the structural political, economic and cultural frameworks within which it operates inherently hinder meaningful progress toward sustainability. The co-option of ideas about nature and sustainability by commercial forces will be examined further in this discussion, but for now it serves as a key example of how structural conditions limit the potential for meaningful ecological change.

⁸ Christopher Upton-Hansen, Kristina Kolbe, and Mike Savage, “An Institutional Politics of Place: Rethinking the Critical Function of Art in Times of Growing Inequality,” *Cultural Sociology* 15, no. 2 (2021): 171–190, <https://doi.org/10.1177/1749975520964357>.

⁹ Pau Salvador, “The Myth of the Natural in Advertising,” *Catalan Journal of Communication & Cultural Studies* 3, no. 1 (2011): 79–93, https://doi.org/10.1386/cjcs.3.1.79_1.

Within this all-encompassing neoliberal context, environmental art must navigate commercial priorities in much the same way sustainability itself does. Museums, galleries and biennales incorporate environmental art and political art in general into their branding, programming and funding strategies. In doing so, they often reframe environmental art to fit market-friendly aesthetics and narratives that prioritise public image and visitor numbers over genuine critical engagement. As a result, environmental art, however well-intentioned, risks being absorbed into the very systems it aims to challenge, as institutions appropriate it to project an appearance of ecological concern while sidestepping the complex demands for systemic change. When art institutions commodify and package the critical aspects of environmental art, they further reduce the work's capacity to challenge dominant structures.¹⁰ Additionally, as it participates in circuits that value visibility, profit and cultural status, environmental art inadvertently contributes to the same consumer-driven economy that underpins ecological degradation. Thus, even if it only aims to raise awareness or provoke reflection, environmental art must contend with the danger of either becoming an ideological tool for greenwashing or a form of entertainment that distracts from the issues at stake.

Such risks are inevitable because the creation, distribution and reception of environmental art are mediated by the cultural apparatuses of its time. When Jacques-Louis David painted *The Death of Marat* (1793), marking art's turn towards political agency as discussed earlier, the image sparked revolutionary fervour precisely because it emerged in a historical moment when visual art was one of the few available forms of mass communication. This granted the depiction extraordinary cultural and political power. Such influence is far more challenging to achieve in today's oversaturated media landscape, where countless images circulate instantly, compete for fleeting attention and are quickly absorbed into the vast flows of the digital realm.¹¹ The challenge is amplified by the global proliferation of art biennales, which contribute to the rapid consumption and aestheticisation of political content. A critical recognition of these contradictions enables the artist to avoid being trapped in a simple binary of rejection or acceptance. Awareness opens up a space where dominant ideologies can be questioned so that they are not uncritically reproduced. However, maintaining this balance in a contemporary context is particularly challenging because the culture industry and digital algorithms control public perception. Commodification and fast media cycles undermine the audience's capacity to pause, reflect

¹⁰ Upton-Hansen, Kolbe and Savage, "An Institutional Politics of Place," 172.

¹¹ Yasmin Ibrahim, "The Politics of Watching: Visuality and the New Media Economy," *International Journal of E-Politics* 3, no. 1 (2012), 1–11, <https://doi.org/10.4018/jep.2012010101>.

and engage with art critically, such that political art and the aesthetic experience become just another form of consumption. In this light, the notion that environmental art can operate as a form of activism capable of driving political action becomes highly contestable.

At this point, a thoughtful reader might reasonably ask: If so many contradictions and structural constraints shape environmental art, why pursue it at all? The answer lies in how the artist confronts these tensions. The climate crisis necessitates a response, even if it is limited in scope. Nevertheless, environmental art should not overstate its potential for change, as doing so could inadvertently support the same shallow, ineffective approaches that continue to fuel global warming. An approach to environmental issues that acknowledges the logical contradictions and structural conditions that limit or complicate solutions means that both the artist and the viewer participate in a form of reflection that resists simplification. When created and received with this cognisance, the aesthetic dimension – the formal, sensory and conceptual qualities of the work – creates an ethical space. Within that space, the viewer is invited to reflect on the complexity of ecological issues, not through the expectation of solutions but through sustained critical attention. The artwork resists offering predetermined political messages or prescribing what the viewer ought to think; instead, it encourages thoughtful engagement. This approach helps preserve art's critical potential. While this project will examine what makes some environmental artworks more compelling than others, a key criterion is the artist's awareness that the work will not produce direct action. This understanding guards against treating the artwork as a form of self-congratulatory triumph and presents it, instead, as a site of unresolved tensions. Such a critical stance resists complacency, which can otherwise produce reductive answers and reinforce familiar narratives that desensitise the viewer to the very concerns the work seeks to address.

The studio work that emerges from this project does not resolve or transcend the inherent challenges, contradictions and limitations explored throughout this discussion. Rather, it acknowledges that the same tensions and paradoxes that inform the practices examined here also shape the artworks produced through this research. However, these tensions are not approached as obstacles to be overcome but as integral conditions to engage with. What distinguishes the studio work from the other practices analysed in this project is the critical manner in which these tensions are confronted and explored through the process of making. In this work, there is no triumphalist tone that might otherwise present it as morally certain or politically resolved. Such a tone would leave little room for critique. In this regard, an approach that limits reflection and questioning promotes a fixed ideology, which

can turn the work into propaganda. Some aspects of the works examined in this project successfully generate critique, while others are marked by contradiction and ambiguity, leading to impasses that offer no definitive resolution or grounds for triumph. As with all artworks, what remains are artistic processes that produce outcomes of varying strength and resonance. This project explores such processes and outcomes, not to diminish the value of environmental art but to gain a better understanding of the factors and forces that shape and challenge its practice.

The broad and diverse scholarship on the many interconnected issues that introduce tensions within environmental art renders the task of reviewing the literature both complex and, at times, daunting. With this context in mind, two important theoretical perspectives are a good starting point to understand how art relates to sociopolitical issues. While not discussed or analysed within the project, these perspectives provide a foundation for the study, as they shape the overall understanding of the tensions between art and activism. In “Realism in the Balance,” György Lukács analyses how politically engaged art must reveal the structural forces underlying the issues it engages with.¹² Although Lukács’s focus is on literature, particularly realist novels, and his analysis refers to a different historical context, “Realism in the Balance” can be read beyond its time and applied to all art forms. Drawing on historical materialism, Lukács argues that political art must reveal the structural forces that drive social and political crises. Such a perspective is central to this discussion, as it offers a framework for evaluating how effectively contemporary environmental art addresses the systemic roots of the climate crisis. Theodor W. Adorno takes Lukács’s analysis further in “Commitment,” where he examines how the very structural conditions of cultural production under capitalism can constrain art’s capacity to remain critically engaged. Adorno addresses how commodification turns art into a product for consumption, which allows dominant ideologies to appropriate it and neutralise its critical force.¹³ Importantly, Adorno does not consider the tension between political content and aesthetic autonomy a problem to address but a necessary condition for art to be a site of critical engagement. Rather than presenting an either/or opposition, this tension becomes a dialectical and ethical process that enables art to

¹² Lukács, “Realism in the Balance,” 33.

¹³ Adorno, “Commitment,” 78.

reveal the complexities of the sociopolitical issues it seeks to address. This insight is particularly relevant to this discussion because it underscores the challenge for contemporary art to remain a critical force within a cultural realm shaped by commodification – a challenge that all politically engaged art must constantly navigate.

Many other theorists, both historical and contemporary, have reflected on how art may or may not function as an activist tool, including Jean-Paul Sartre, Boris Groys and Gregory Sholette. However, further views are unlikely to significantly enhance this study, as the outlined theorists provide an adequate background for the context at hand.

Given that constructs of nature add another layer of complexity to both environmental art and activism, it is essential to examine how these constructs emerged and became culturally entrenched. Dominant conceptions of nature in the West emerged primarily through the Scientific Revolution, though they gained traction and permanence as they were also disseminated through intellectual, philosophical and artistic domains. This discussion focuses on Western history because it is within this context that many of the prevailing assumptions about nature took shape and continue to inform contemporary understandings that underpin both environmental art and activism.

In *The Veil of Isis*, Pierre Hadot explores the evolution of Western views on nature. The text outlines two contrasting attitudes towards nature: one of reverence, represented by Socrates, and one of domination, associated with figures such as Francis Bacon.¹⁴ Hadot proposes that bringing these perspectives together could help society reestablish its relationship with nature, drawing on philosophers like Goethe to reiterate the combination of science with an aesthetic appreciation of nature's beauty. While *The Veil of Isis* indirectly informs this study as to how historical conceptions of nature have shaped contemporary thinking, Hadot's suggested synthesis limits the text's relevance. The proposition leans towards a romantic view that risks reinforcing the very tropes of nature that this study critically engages with. In contrast, Donald Worster's *Nature's Economy: A History of Ecological Ideas* offers an approach that is especially relevant to this study, exploring how economic forces have shaped modern conceptions of nature. Worster's focus on how the term *oecconomy* evolved is particularly pertinent as it provides an insight into how economic imperatives have become the dominant factor in shaping conceptions of nature as a resource

¹⁴ Pierre Hadot, *The Veil of Isis: An Essay on the History of the Idea of Nature*, trans. Michael Chase (Cambridge, MA: Harvard University Press, 2006).

to be exploited.¹⁵ Gilbert LaFreniere also analyses exploitative attitudes towards nature in *The Decline of Nature: Environmental History and the Western Worldview*. LaFreniere argues that two perspectives have shaped nature's objectification: providence (the Christian worldview) and progress (the science-driven vision of unlimited development).¹⁶ However, LaFreniere's deterministic view that societies rise and fall is somewhat at odds with this project. Through its focus on environmental art as a way to engage with the complexities of addressing the climate crisis, this study implies the exigency of critical human agency in the face of systemic challenges, rather than passive determinism.

Unlike Hadot, Worster and LaFreniere, who adopt a broader historical approach to examining constructs of nature, in *The Wildness Pleases* Christopher Thacker focuses on the development of the Romantic Sublime.¹⁷ Thacker's overview informs a key aspect of this research, as the sublime aesthetic continues to influence environmental artists in a way that diminishes their art's critical potential through its focus on beauty (the industrial sublime images of Edward Burtynsky provide an apt example). If anything, Thacker's descriptive focus overlooks interpretative aspects of the Romantic Sublime aesthetic. For example, the unease caused by the sublime can be understood as an aesthetic response to the unease caused by the upheavals of its era – the French Revolution, the Industrial Revolution and the disenchantment with Enlightenment rationalism. Although the text offers informative insights across disciplines such as travel literature and landscape gardening, a historical materialist view is key to clarifying how the aesthetic form reflects and is shaped by its sociopolitical contexts.

Building on the earlier analysis of constructs of nature, Slavoj Žižek's lecture "Ecology Without Nature" draws on Timothy Morton's critique of nature as an ideological construct to call for the removal of the concept of "nature" from ecological discourse, not as a denial of ecological reality but as a way to challenge the ideological assumptions the term carries.¹⁸ Žižek advocates for a materialist approach, arguing that dismantling constructs of nature would reveal how global warming is linked to social, economic and political systems.

¹⁵ Donald Worster, *Nature's Economy: A History of Ecological Ideas* (Cambridge: Cambridge University Press, 1987).

¹⁶ Gilbert LaFreniere, *The Decline of Nature: Environmental History and the Western Worldview* (Palo Alto, CA: Academica Press, 2008).

¹⁷ Christopher Thacker, *The Wildness Pleases: The Origins of Romanticism* (New York: St. Martin's Press, 1983).

¹⁸ Slavoj Žižek, "Ecology Without Nature," lecture, posted June 29, 2019, by Intellectual Deep Web, YouTube, 49:47, <https://www.youtube.com/watch?v=jYx56R2s228>. Žižek borrows the title of his lecture from Timothy Morton's book of the same name.

While many contemporary philosophers engage with constructs of nature, including Timothy Morton and Donna Haraway, Žižek's radical proposal aligns with ideas central to this study, which highlights that constructs of nature obscure the systemic drivers of the climate crisis.

An insight into how art supported the rise of industry, therefore contributed to environmental harm, helps to further clarify the complexities of art as a form of environmental activism. In *Art and the Industrial Revolution*, Francis Klingender examines how artistic and craft innovations accelerated industrial processes during the Industrial Revolution.¹⁹ Grounded in Marxist theory, Klingender's approach treats art not as a separate or purely personal activity, but as something that reflects and is shaped by the larger social, economic and political systems around it. The analysis provides a valuable lens, both for the discussion and the studio work, for understanding how art can both critique and inadvertently participate in the very systems that cause environmental harm.

Before moving on to the artistic engagement with environmental issues, it is noteworthy that such engagement began soon after Rachel Carson highlighted the dangers of pesticides for ecosystems in *Silent Spring*. This text is outside the scope of the project but is worthy of mention for its importance, as it sparked a pivotal shift in public perspective and environmental policy, and paved the way for art movements such as land art.²⁰

Environmental art materialised in the mid-twentieth century, but early signs of ecological awareness were already manifesting in the nineteenth century, as artists began to recognise the consequences of industrialisation on landscapes and the atmosphere. In response to such awareness, as well as to new scientific understandings of climate as a dynamic, long-term system, artists began to depict nature no longer as idealised, static or sublime but as active, mutable and affected by human activity. The atmospheric studies of John Constable provide a good example of the pivot from landscape to environment – from what is observed to what is both seen and felt through the totality of the surroundings.²¹ Similarly, in *Rain, Steam, and Speed – The Great Western Railway* (c. 1844), J.M.W. Turner depicts industrial atmospheric pollution and reflects on how technology begins to dominate the natural environment.²² While there are many artists who engaged with the transformations of nature throughout the nineteenth century, the examples of Constable and Turner highlight

¹⁹ Francis D. Klingender, *Art and the Industrial Revolution* (St. Albans, Herts.: Paladin Press, 1972).

²⁰ Nikki Springer, *An Analysis of Rachel Carson's Silent Spring* (London: Macat Library, 2017), 12, <https://doi.org/10.4324/9781912281237>.

²¹ Thornes, "A Rough Guide to Environmental Art," 395.

²² Eric Shanes, *The Life and Masterworks of J.M.W. Turner* (New York: Parkstone International, 2004), 233, ProQuest Ebook Central, <https://ebookcentral.proquest.com/lib/usyd/detail.action?docID=915253>.

how these early depictions signal the emergence of nature as a subject for reflection and a key element in cultural discourse.

This engagement with environmental issues marked a critical development in the artistic field, as artistic focus shifted to concerns about materiality, waste and the systems driving climate change. A synoptic survey of key environmental artists offers an overview of these developments, organised by how their practices approach ecological issues, whether through process, materials, cultural contexts or explicit political engagement. One early and influential figure marking the turning point in environmental engagement is Robert Smithson, whose *Spiral Jetty* (1970) is composed of earth and rocks extending over 400 metres into Utah's Great Salt Lake. The work spends long periods submerged and re-emerges coated in beautiful, white crystalline salt.²³ Smithson's art medium is nature itself. As water, erosion and time shape the work, *Spiral Jetty* invites reflection on forces beyond human control. However, from an Adornian perspective, *Spiral Jetty*'s engagement with deep time aestheticises decay, creating a kind of spectacularity that may unintentionally obscure the immediate sociopolitical realities of environmental destruction by framing ecological change as beautiful, distant and inevitable. The work's current difficulties, such as reduced water levels caused by drought and agricultural water diversion, highlight the very ecological issues that this framing risks sidelining.

Similarly to Smithson, Joseph Beuys also works with nature as a medium. His "social sculpture" *7000 Oaks* (1982) involved planting trees in urban spaces.²⁴ While Beuys's project embodies ecological action, it does not bring to light the entrenchment between capitalism and urban expansion. This limitation becomes clear when Beuys's work is compared to *Wheatfield – A Confrontation* (1982) by Agnes Denes. In this work, the tension between urbanisation and the destruction of nature is more obvious. Wheat is planted against the backdrop of New York City, with Wall Street clearly visible, highlighting the link between capitalism, power and urbanisation.²⁵ In contrast, *7000 Oaks* can be seen more as a symbolic gesture than a challenge to the systemic drivers of the climate crisis. Such distinction is

²³ Rory O'Dea, "Speculative Geology," in *Robert Smithson, Land Art and Speculative Realities* (New York: Routledge, 2023), <https://doi.org/10.4324/9781003305262>.

²⁴ Fabio Maria Montagnino, "Joseph Beuys' Rediscovery of Man–Nature Relationship: A Pioneering Experience of Open Social Innovation," *Journal of Open Innovation* 4, no. 4 (2018), <https://doi.org/10.3390/joitmc4040050>.

²⁵ Nick Stillman, "Agnes Denes," *Artforum International* 51, no. 5 (2013): 203, <https://www.proquest.com/magazines/agnes-denes/docview/1269694293/se-2>.

central to this project, which underscores the difficulties that art faces in articulating the systemic drivers of ecological collapse through the aesthetic form.

The focus on nature as a medium continues with the work of Maria Thereza Alves, which addresses histories of colonialism. Alves grows seeds found in the ballast soil of a ship once used for colonial trade, using botanical research to reveal historical and political forces that would otherwise remain obscured and would be experienced uncritically. Her work *Seeds of Change: Marseille* (2009) shows how soil physically and metaphorically holds traces of migration, trade and exploitation.²⁶ *Seeds of Change* is pertinent to this project because, as it exposes forgotten narratives, it can be understood through György Lukács's lens as a challenge to processes of reification that lead to the erasure of specific histories – in Alves' case, the exploitation of land and labour during colonialism.²⁷

In a parallel approach to treating natural materials as both carriers and revealers of memory and history, Otobong Nkanga's *The Pursuit of Bling* (2014) traces the transformation of mica from raw mineral to makeup ingredient.²⁸ The work exposes how the pursuit of luxury, fuelled by both Western and increasingly global demand for cosmetics, drives ecological despoliation. Nkanga's focus on materials reveals how the colonial exploitation of natural resources is not just a historical event but continues to drive the structural inequalities at the heart of the climate crisis. The work of Tania Kovats also engages with environmental concerns through natural materials, with samples of over 200 oceans and seas displayed in individual bottles on shelves in *All the Seas* (2012–2014).²⁹ Although the installation prompts reflection on the interconnectedness of marine environments, the visual presentation of the ocean as a collectible object reinforces a commodified view of nature. By contrast, *Seeds of Change: Marseille* and *The Pursuit of Bling* demonstrate how art can attempt to confront systemic issues and challenge the commodification of nature rather than reproducing it. Ultimately, *All the Seas* offers an abstract representation that detaches viewers from the instrumental economic drivers of oceanic degradation.

²⁶ Carin Kuoni, "Introduction: Seeds of Change," in *Maria Thereza Alves: Seeds of Change*, ed. Carin Kuoni and Wilma Lukatsch, (Amherst, MA: Amherst College Press, 2022), 5–7, <https://www.jstor.org/stable/10.3998/mpub.12762617.3>.

²⁷ Kuoni, 5–7.

²⁸ Katrin Pahl, "Improbable Intimacy: Otobong Nkanga's Grafts and Aggregates," *Theory & Event* 24, no. 1 (2021): 240–267, <https://www.proquest.com/scholarly-journals/improbable-intimacy-otobong-nkangas-grafts/docview/2484285034/se-2>.

²⁹ Karen Orton, "Tania Kovats on Evaporating Sculptures and Art Activism," *AnOther*, December 8, 2015, <https://www.anothermag.com/design-living/8110/tania-kovats-on-evaporating-sculptures>.

In total contrast to a direct engagement with nature or natural materials, Robert Rauschenberg focuses on human-made discards. At first glance, *Cardboards* (1971) gestures to ecological concerns through ideas of disposability.³⁰ Created when Fresh Kills Landfill in Staten Island, New York City, was the world's largest landfill, the work reflects the growing awareness of waste at the time. However, in the broader context of Rauschenberg's practice, the work is more an exploration of materiality than a direct ecological statement. *Cardboards* is nevertheless relevant as it informs this project's studio component, which addresses systemic issues of production and disposal with recovered cardboard as the main material.

Discarded resources are also central to El Anatsui's practice, as he transforms aluminium bottle caps into large, tapestry-like installations. At first glance, the shimmering of *Versatility* (2006) evokes impressions of wealth and opulence. However, when viewed closely, it becomes clear that the work is made from mass-produced waste materials. By bringing to visibility the contrast between luxury and trash, *Versatility* highlights the implications of consumerism within global systems of inequality and excess. This critical framing informs both this discussion and the related studio research on the commodification of waste and the disproportionate environmental burdens placed on vulnerable communities.

A more blatantly political approach is manifest in Marina Zurkow's *Dear Climate* (2014), in which agitprop-style posters display phrases like "SALUTE THE SUPER-STORMS" to convey the implications of climate change.³¹ Paired with guided audio meditations, the project promotes awareness through a calm, personal lens rather than alarmism.³² However, the contemplative nature of *Dear Climate* risks reducing the issue of climate change to something that is internalised and individual, rather than prompting collective, activist engagement. The work is also overly didactic, potentially sacrificing the nuance of the subject matter in favour of straightforward messaging – a concern that Adorno would equate to propaganda. A similarly literal strategy is evident in the work of Justin Brice Guariglia, an environmental artist and activist whose practice centres on raising public awareness about the climate crisis. In *Climate Signals* (2018), solar-powered signs installed in public spaces flash simple messages, such as "CLIMATE DENIAL KILLS." The work extends climate discourse beyond galleries but reduces complex issues to slogans.³³ Another

³⁰ Yve-Alain Bois, Claire Elliot and Josef Helfenstein, *Robert Rauschenberg: Cardboards and Related Pieces* (New Haven, CT: Yale University Press, 2007).

³¹ Marina Zurkow, "Dear Climate," *ASAP/Journal* 3, no. 3 (September 2018): 498–499, <https://www.proquest.com/scholarly-journals/dear-climate/docview/2447126231/se-2>.

³² "Posters," *Dear Climate*, accessed July 1, 2025, <https://www.dearclimate.net/posters>.

³³ "Posters," *Dear Climate*.

of Guariglia's works, *After Nature* (2017), features aerial photographs of Greenland's glaciers, created in collaboration with NASA.³⁴ While scientifically valuable, the involvement of NASA may lend the work institutional prestige. The focus on this status, coupled with the emphasis on the high quality and the large scale of the photographs, give the work an Adornian spectacularity that can overshadow the core issue of the human role in climate change, thus limiting a more critical engagement.

In a shift toward cultural perspectives, the environmental implications of colonialism are central concerns in Cecilia Vicuña's art.³⁵ In *Quipu del Exterminio* (2022), Vicuña reinterprets the *quipu*, an ancient Incan system for recording events, in order to link land destruction to the erasure of ancestral knowledge.³⁶ The work emphasises the connection between cultural survival and ecological preservation, an important link that this project highlights as being often overlooked in mainstream environmental discourse. However, Vicuña's work is filtered through art institutions that risk diluting its critical force in favour of curatorial or market priorities. In this regard, through the theoretical lens of Lukács, *Quipu del Exterminio* may reduce the complexities of colonialism and ecological destruction to aesthetic symbols, disconnected from the material realities the work seeks to critique.

Unlike the preceding artists, Natalie Jeremijenko's art cannot be easily categorised by process, materials or cultural context, perhaps because it functions more as engineering than as art in the conventional sense. Jeremijenko's *Urban Space Station* (USS) (2008–ongoing) is a rooftop installation inside which food is grown hydroponically using CO₂ captured from the building's emissions.³⁷ The plants release oxygen, which is then circulated back into the building to improve air quality while decreasing reliance on large-scale agriculture.³⁸ USS provides a key example of innovative, environmentally conscious design. However, it is also the case that the work's focus on small-scale solutions, such as rooftop gardens, can be seen as a "green" form of consumerism rather than advocating for a significant political or economic transformation. This discussion examines in depth the prevalence of eco-friendly

³⁴ "After Nature," Justin Brice Guariglia, accessed July 9, 2025, <https://justinbrice.com/after-nature>.

³⁵ Jacqueline Witkowski, "Threading Together Politics and Poetics in Cecilia Vicuña's Fiber Art," *Journal of Textile Design Research and Practice* 7, no. 1 (2019): 38–52, <https://doi.org/10.1080/20511787.2019.1575082>.

³⁶ Witkowski, 38–52.

³⁷ Rory Hyde, "The Environmental Medic Natalie Jeremijenko: xClinic," in *Future Practice: Conversations from the Edge of Architecture* (New York: Routledge, 2012), 254–266.

³⁸ "The Urban Space Station," Mediamatic, accessed July 2, 2025, <https://www.mediamatic.net/en/page/195915/the-urban-space-station>.

piecemeal solutions that, as Žižek would argue, allow consumers to disavow the climate crisis without confronting its structural drivers.³⁹

In contrast to the previous analysis of specific artworks, the texts that follow examine environmental art from a theoretical perspective. They analyse how it functions as a form of activism through ritualistic, relational, archival and site-specific practices, framing artistic production as a site for critical reflection, intervention, and pedagogical innovation.

In *Decolonizing Nature: Contemporary Art and the Politics of Ecology*, TJ Demos combines art history, ecological theory and postcolonial thought to argue that contemporary art can offer new visions for sustainability and climate justice. Although the text provides a comprehensive survey of environmental art, some of the creative projects that Demos examines fall under a very expansive definition of art, including acts of planting and cultivating. Therefore, they take on a didactic function, appearing more as demonstrations of ecological responsibility than as engagements with the ambiguity that characterises art – an issue central to this project’s distinction between art and activism.

Building on Demos’s exploration of art’s engagement with ecological concerns, in “Undermining the Archive: on Art and Political Ecology” Amanda Boetzkes examines how archives can offer insights into art’s political engagement with environmental issues. Focusing on the archives of Lucy Lippard and Mel Chin, Boetzkes explores how ecological remediation and bodily gestures can challenge the dominant, exploitative narratives of extractivism and colonialism. However, the text overlooks how even archival practices can be co-opted and commodified by institutional market forces, potentially reinforcing the very exploitative logic that the documented artworks aim to resist.

With a turn toward art historical enquiry, Mark Cheetham’s *Landscape into Eco Art: Articulations of Nature Since the '60-s* traces the evolution from landscape traditions to mid-twentieth-century land art and contemporary eco-art practices. Cheetham frequently returns to Robert Smithson, whose writings on the picturesque, landscape, and site/non-site relations serve as recurring points of reference linking landscape art, land art, and ecological practice. The text provides a robust theoretical foundation for understanding the historical and conceptual frameworks that shape environmental art. In a similar historical analysis, Alan Sonfist’s *Art in the Land: A Critical Anthology of Environmental Art* traces the emergence of environmental and land art in the 1960s and 1970s, and critiques industrial modernity. As Sonfist’s analysis highlights practices that engage directly with natural sites and use earth and

³⁹ Slavoj Žižek, *Living in the End Times* (London: Verso, 2018), 4.

plants as materials, it frames art as process rather than object. While art as process can be seen as a resistance to commodification, market forces nevertheless absorb these practices through visual documentation, institutional framing and tourism, thereby undermining the ideal.

In “Environmental Artworkers” Timothy Collins delves deeper into the analysis of environmental art as a form of activism through the theoretical lens of Herbert Marcuse, Grant Kester, and Helen and Newton Harrison. The text discusses the autonomy of art and its potential to reveal societal contradictions, with an emphasis on art’s capacity to expose critical truths rather than solve problems. Such critique aligns with this project’s argument that art’s critical potential lies in highlighting issues and contradictions, rather than driving tangible transformation.

In comparison to the previous texts, which highlight a more pragmatic and interventionist approach to environmental art, Suzi Gablik’s *The Reenchantment of Art* advocates for a transformative, spiritual approach. The text proposes that artists can foster healing and promote ecological responsibility by ritualistic practices that reconnect humanity with spiritual, mythic and archetypal sources. Gablik’s approach offers a compelling reframing of the ecological crisis as a symptom of a deeper spiritual disconnection that makes material exploitation culturally acceptable. In this sense, the text contributes an important conceptual perspective to discussions of environmental art, even if the practical outcomes of spiritual renewal remain inherently difficult to measure.

Broadening the analysis to include educational contexts, Raisa Foster, Jussi Mäkelä and Rebecca Martusewicz’s *Art, EcoJustice, and Education – Intersecting Theories and Practices* presents art as an educational tool to challenge anthropocentric worldviews and foster relational engagement with the more-than-human world. While offering a noteworthy interdisciplinary foundation for grounding art education in ecological ethics and collective responsibility, the text is not immediately pertinent to this project, which focuses on the present structural issues that limit the potential of art as environmental activism.

Shifting the focus to Indigenous and decolonial perspectives, *Let the River Flow*, edited by Katya García-Antón, Harald Gaski, and Gunvor Guttorm, examines the intersection of Indigenous art, environmental activism, and decolonial politics by focusing on the Áltá Action, a Sámi-led protest against a hydroelectric dam in Sápmi. *Let the River Flow* is not directly relevant to this project, which focuses on the broader political, economic and cultural structures that hinder environmental sustainability and, by extension, environmental art. However, the text remains significant as it shows how colonial histories continue to influence

environmental discourse and offers insight into the role of art in challenging ecological and social injustices.

Each chapter in this discussion explores some of the complexities underlying the central argument that environmental art is entangled in problems and contradictions that cannot be easily resolved. Collectively, the chapters provide an overview of how these tensions manifest across conceptual, material and artistic registers. The discussion traces how conceptions of nature developed historically and crystallised into deeply entrenched cultural constructs; it explores how marketing appropriates these constructs and impedes meaningful progress on sustainability; it interrogates sustainability narratives advanced through the idea of “green” technologies; it questions the current viability of sustainability through the example of fast fashion; it critically reflects on contemporary artistic practices, including the studio work developed through this research, to assess if and how these practices contribute to environmental discourse. This layered analysis reveals the structural conditions – entrenched cultural assumptions, market logic, infrastructural limitations and other systemic constraints – within which these practices must operate. It shows how these conditions shape sustainability discourse, undermine environmental sustainability and challenge environmental activism, including artistic practice, in addressing the climate crisis. The analysis demonstrates how these conditions function as the spokes of a wheel: separate yet interconnected, all inextricable parts of a larger system feeding into the central hub of climate change. Ultimately, they define both the possibilities and limitations of artistic engagement with ecological concerns.

Chapter 1 contends that conceptions of nature are neither fixed nor universal but emerge from historical and cultural conditions. It examines how prevailing notions of nature developed from the sixteenth to the nineteenth centuries. The discussion begins with the Scientific Revolution, when the heliocentric model proposed by Copernicus, and later advanced by Galileo, fundamentally altered humanity’s sense of its own place in the cosmos and its relationship to nature. An examination of the ideas of René Descartes, Jean-Jacques Rousseau, Carl Linnaeus and Henry David Thoreau, along with the artworks of Caspar David Friedrich and John Constable, explores how these key historical figures contributed to shaping modern conceptions of nature. The chapter concludes with examples of how conceptions of nature can be appropriated for nationalist ideology.

Chapter 2 explores some problems and contradictions that underpin the idea of environmental sustainability. The analysis begins with the example of carbon fibre. Although the lightweight nature of this material improves fuel efficiency, its production processes generate significant emissions, and its recycling poses environmental problems. The example of Fiji Water and its marketing narrative of purity highlights how portrayals of unprocessed natural resources can obscure the technological processes involved in their extraction, packaging and delivery to the consumer market. An overview of Fairtrade certification reveals that this equitable trade model fails to fully meet its sustainability objectives due to the complexities of global trade systems and consumer misconceptions. The analysis concludes with an evaluation of solar panels, which generate clean energy but their manufacturing is resource-intensive and their disposal poses significant environmental problems due to the lack of effective recycling systems at the end of the panels' lifespan. The examples are deliberately unrelated to illustrate how the idea of sustainability becomes difficult to realise across vastly different sectors. The discussion ultimately highlights how eco-consumerism is an ideology that obscures the root causes of climate change, weakens efforts to achieve true sustainability, and casts doubt on the reliability of environmental sustainability claims.

Chapter 3 examines how fashion has evolved from a symbol of exclusivity to a mass-market phenomenon driven by new technologies and global trade. As this shift has made clothing very affordable and widely available, it has led to the rise of fast fashion, an industry built on rapid production, low cost and enormous outputs. Although fast fashion accounts for 10% of global greenhouse gas emissions, public discourse continues to focus primarily on fossil fuels. The chapter explores how fast fashion exacerbates global warming through excessive water and pesticide use in cotton production, GHG emissions from the manufacturing of polyester, microplastic pollution, and toxic waste from textile and leather dyeing and manufacturing. The discussion also highlights how a global lack of recycling infrastructure redirects enormous amounts of discarded clothes to landfills, significantly contributing to harmful emissions and underscoring the pernicious issue of climate injustice, as the discards predominantly end up in the Global South.

Chapter 4 evaluates how contemporary artists Edward Burtynsky, Olafur Eliasson, Tomás Saraceno and Lara Almarçegui address ecological concerns. The analysis also highlights the tensions in their approaches. The beauty of Burtynsky's industrial sublime depictions reduces the urgency to address the climate crisis. In Eliasson's *Weather Project*, spectacle and emotional impact overshadow the work's critical potential. Saraceno's spider

webs raise ethical questions about the processes that underlie their creation, and Almarçegui's project *Mineral Rights* reinforces the very structural issues underlying the extractive practices that the work seeks to challenge. Ultimately, the discussion brings attention to the necessity of awareness in regard to the challenges and contradictions that artists can encounter when they seek to address climate issues through their practice.

Chapter 5 examines the studio component of this project. The analysis of artworks made with salvaged materials reveals how consumer waste plays a pivotal role in the environmental crisis. The works propose that waste is not merely the excess of consumption but a structural component of capitalist systems, in which the logic of disposability sustains perpetual cycles of production and consumption. The discussion evaluates three bodies of work created from recovered materials, including cardboard packaging, PVC pipes, furniture parts and polystyrene. The critique highlights the structural forces responsible for the global waste crisis: the built-in obsolescence of products under capitalism, the global scarcity of recycling infrastructure, and the commodification of waste to generate profit from what appears to be an intractable problem. The chapter explores how the works address the problems and the ensuing tensions that reduce their political force.

This project began with the assumption that environmental art holds significant potential to critique and shape public discourse on the climate crisis. What has emerged through the research is not a set of definitive answers, but a far more nuanced understanding of how environmental art operates within, and is often undermined by, the very systems it seeks to challenge. Many of the insights gleaned through the research were unforeseen at the outset, especially the extent to which structural contradictions persist, the entanglement of art with commodification, and the limitations of sustainable measures when faced with systemic conditions. Such findings prompt a reconsideration of earlier assumptions, as they reveal that various contexts affect art's capacity to be a form of environmental activism far more extensively than previously imagined. Nevertheless, instead of rendering environmental art ineffective, these tensions engage the viewer through an invitation to grapple with problems and contradictions that reflect the complexity of the climate crisis itself.

1. THE INVENTION OF NATURE: MYTHS AND IDEOLOGIES

When art seeks to address the environmental crisis, it must inevitably confront problems inherent in the interpretation of nature. This is because nature is not a fixed concept; it is a construct, invested with meanings that emerge through various social and cultural processes from which it cannot be extricated.¹ Nature can be conceived as the physical universe, the unknowable laws of creation, or the fundamental essence of something, such as what we term *human nature*. It is taken to be an irreducible quantity that pervades everything while remaining elusive and undefinable. This ambiguity allows nature to be endlessly reimagined and invested with a wide range of meanings. As a result, nature becomes the ideal site for cultural projection, shaped by ideological, mythological, political or commercial interests.

It is challenging for environmental artists not to become entangled in these subtle constructions and reproduce certain assumptions of nature without thoroughly interrogating their cultural framing. This is because when an artwork seeks to highlight a problem, it must inevitably represent some form of that problem in order to make it visible. In addressing environmental degradation, artists often rely on dominant representations of nature, and as a result, may inadvertently reinforce those very ideas they aim to critique. To create an ethical space for the art viewer, it is necessary to outline how these nuanced contradictions are not only expected but also unavoidable. In pursuit of this aim, the discussion begins with an exploration of how various scientific, religious, social and cultural factors shape prevailing understandings of nature. A comprehensive account of how changing conceptions of nature have developed across an extensive historical timeline is outside the scope of this project. Instead, the focus is limited to the period of modernity, with attention to the key contexts in which new perspectives of nature emerged, evolved and, in some cases, crystallised into myths that remain deeply embedded in contemporary culture. A summary of the ideas of René Descartes, Jean-Jacques Rousseau, Carl Linnaeus and Henry David Thoreau, together with an analysis of the works of Caspar David Friedrich and John Constable, demonstrates how these key figures helped shape influential and lasting conceptions of nature.

Perceptions of nature and artistic responses to it are always contingent on what societies are taught to observe and value. As such, these perceptions shift according to

¹ Phil Macnaghten and John Urry, "Rethinking Nature and Society," in *Contested Natures* (London: Sage Publications, 1998), 11, <https://doi.org/10.4135/9781446217337.n1>.

specific cultural and social contexts.² In the sixth century BCE, understanding of nature in China was shaped by Taoist teachings, which emphasised connection and harmony with the natural world.³ Similarly, many ritual-based societies around the world have traditionally viewed themselves as inseparable from nature. In ancient Greece, nature was seen both as a metaphysical realm to be explored through philosophy and as a physical domain accessible through the study of physics.⁴ In Europe, until the late fifteenth century, the natural world was conceived through two distinct perspectives. The first view was shaped by Aristotelian scholasticism, which inherited the Greek vision of nature. Medieval Christian scholars adapted this framework into a study of the natural world that examined the relationships between fundamental, often opposing elements, such as form and matter, cause and effect, and the spiritual and the material. In the second perspective, nature was imagined as a hostile and dangerous domain inhabited by demonic forces. This view was based on Catholic doctrine, which contrasted the fallen world with the Garden of Eden. As the place of Adam and Eve's exile, Earthly nature embodied sin and moral corruption.⁵ Scant attention was paid to nature in the sense of scientific observation and analysis because the natural environment was merely a backdrop to human life. It was only in the late eighteenth century, with the rise of the sublime appreciation of nature, that landscape elements such as mountains, once considered unsightly, began to be valued for their beauty.

During the sixteenth and seventeenth centuries, the Scientific Revolution led to a series of discoveries that dramatically shifted understandings of nature and the physical world. In 1543, Copernicus challenged the long-held Aristotelian view that planets revolved around the Earth, as he proposed that the Sun is at the centre of the solar system and is orbited by Earth and the other planets. Copernicus also overturned Aristotle's idea that the stars circled the Earth by showing that the Earth itself rotates.⁶ In 1605, Johannes Kepler revealed that planetary orbits are elliptical rather than perfectly circular, as previously thought. Shortly after, in 1609, Galileo's invention of the telescope allowed him to support Copernicus's heliocentric theory and also discover the four largest moons of Jupiter – Io, Europa, Ganymede and Callisto – in 1610. A few decades later, between 1665 and 1666,

² Konstantin Bazarov, *Landscape Painting* (London: Octopus, 1981), 11–12.

³ James Miller, "Daoism and Nature," in *Nature Across Cultures*, ed. Helaine Selin (Dordrecht: Springer Netherlands, 2003), 393–409, https://doi.org/10.1007/978-94-017-0149-5_20.

⁴ Hadot, *The Veil of Isis*, 91–92.

⁵ LaFreniere, *The Decline of Nature*, 96–97.

⁶ Piero E. Ariotti, "Toward Absolute Time: The Undermining and Refutation of the Aristotelian Conception of Time in the Sixteenth and Seventeenth Centuries," *Annals of Science* 30, no. 1 (1973): 31–50, <https://doi.org/10.1080/00033797300200021>

Isaac Newton demonstrated that the same gravitational laws govern both the stars and planets, as well as the objects on Earth.⁷

These discoveries sparked a wave of curiosity about all aspects of the natural world, not just the stars and the sky. Scientific focus began to shift towards the study of life and nature on earth. In this regard, the invention of the compound microscope by Zacharias Janssen in 1590 was especially important because it revealed previously invisible worlds and transformed how nature was observed and understood.⁸ In 1673, Antonie van Leeuwenhoek refined the instrument and pioneered microscopic studies.⁹ Van Leeuwenhoek was the first to describe red blood cells and analyse the eye's crystalline lens.¹⁰ In 1676, he discovered bacteria in pond water and in 1678 published the first drawings of spermatozoa.¹¹ The significance of van Leeuwenhoek's work cannot be overstated, as it laid the foundation for modern understandings of infectious diseases.¹²

Growing scientific knowledge gradually demystified the natural world. By the late seventeenth century, science established a new conception of nature as a causal mechanism – an inert, mechanical system governed by cause and effect, with motion initiated and maintained by an external divine force. Carolyn Merchant writes that this mechanistic worldview denied nature any intrinsic vitality or autonomy, casting it as passive and devoid of agency.¹³ Scientists at the time viewed nature as a divine creation, which further supported the belief that the external force of God controlled its functions. Copernicus, Galileo, Kepler and Newton were all devout Christians.¹⁴ The scientific revolution unfolded alongside the Counter-Reformation, a period in which the Catholic Church was reaffirming its authority and doctrines in response to the Protestant Reformation.¹⁵ Religion exerted a strong influence even on disciplines grounded in observation and evidence, such as science. Gilbert

⁷ Anthony Storr, "Isaac Newton," *British Medical Journal* 291, no. 6511 (1985): 1779–1784, <https://doi.org/10.1136/bmj.291.6511.1779>.

⁸ Michael W. Davidson, "Pioneers in Optics: Zacharias Janssen and Johannes Kepler," *Microscopy Today* 17, no. 6 (2009): 44–47, <https://doi.org/10.1017/S1551929509991052>.

⁹ Huib J. Zuidervaart and Douglas Anderson, "Antony van Leeuwenhoek's Microscopes and Other Scientific Instruments: New Information from the Delft Archives," *Annals of Science* 73, no. 3 (2016): 257–288.

¹⁰ Gustave Fassin, "Something About the Early History of the Microscope," *The Scientific Monthly* 38, no. 5 (May 1934): 452–459.

¹¹ Jan James, "Van Leeuwenhoek's Discoveries of 1677–1678: A Look Too Far," *Micron* 25, no. 1 (1994): 1–4, [https://doi.org/10.1016/0968-4328\(94\)90050-7](https://doi.org/10.1016/0968-4328(94)90050-7).

¹² Howard Gest, "The Discovery of Microorganisms by Robert Hooke and Antoni Van Leeuwenhoek, Fellows of the Royal Society," *Notes and Records of the Royal Society of London* 58, no. 2 (2004): 187–201.

¹³ Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution* (New York: Harper & Row, 1983), 102–103.

¹⁴ LaFreniere, *The Decline of Nature*, 121.

¹⁵ Frederik van Niekerk, "Reformation and Scientific Revolution: Historical Coincidence or Continual Renewal?," *In Die Skriflig* 54, no. 2 (2020): 1–12, <https://doi.org/10.4102/ids.v54i2.2538>.

LaFreniere writes that the impulse to study and understand the workings of nature was often seen as a moral pursuit meant to express reverence for the divine.¹⁶ However, despite such faith-driven motivation, neither religion nor science conceived nature as having a soul.¹⁷

The belief that the soul was exclusive to humans set humanity apart from the rest of nature. In 1644, René Descartes reiterated this disconnection as he asserted that reliable knowledge could be achieved only through reason, a capacity which he regarded as uniquely human. This way of thinking effectively made the human mind the ultimate point of reference for understanding the world, while positioning nature not as something with its own purpose and agency but as a mere extension of human existence.¹⁸ Descartes's view aligned with both Christian and scientific thinking of the time, which saw nature as a lifeless mechanism created and set in motion by God, but ultimately something humans could study, measure and control through science, mathematics and technology.¹⁹ This shift in perspective helped shape modern attitudes towards nature as something passive and subject to human mastery. Such view became so deeply embedded in culture that not only it continues to shape contemporary understandings of nature as an object of exploitation but also precludes ethical questioning of human domination over it. Pierre Hadot captures this mindset in his discussion of Kepler, who proclaimed that humanity was becoming the “master of God's work.”²⁰ Seventeenth-century artistic depictions reinforced this notion by portraying nature as the goddess Isis, whose veil symbolised nature's hidden secrets that science was beginning to unveil.²¹

The scientific revolution also sparked a renewed interest in botany, which played a key role in further shaping new conceptions of nature and also led to the creation of botanical gardens. Since antiquity, interest in botany had been driven largely by practical factors, such as medicinal applications. After the fall of the Roman Empire, this interest in botany had declined and the formal study of plants began fading during the medieval period in Europe.²² Beginning in the sixteenth century, botanical interest experienced a resurgence, shaped not

¹⁶ LaFreniere, *The Decline of Nature*, 178–179.

¹⁷ Paul Waldau, “Religion and Animals,” in *In Defense of Animals: The Second Wave*, ed. Peter Singer (Malden, MA: Blackwell, 2006): 69–87.

¹⁸ Joshtrom Isaac Kureethadam, *The Philosophical Roots of the Ecological Crisis: Descartes and the Modern Worldview* (Newcastle: Cambridge Scholars Publishing, 2017), 130.

¹⁹ LaFreniere, *The Decline of Nature*, 125.

²⁰ Hadot, *The Veil of Isis*, 128–129.

²¹ Hadot, 128–129.

²² Frank N. Egerton, “A History of the Ecological Sciences: Part 7. Arabic Language Science: Botany, Geography, and Decline,” *Bulletin of the Ecological Society of America* 83, no. 4 (2002): 261–266, <https://www.jstor.org/stable/27650514>.

only by an admiration of nature's beauty and a desire to understand it, but also by a commercial interest in propagating plants and producing spices locally rather than importing them. Unprecedented numbers of scholars, physicians, publishers and amateur observers turned their attention to cataloguing the plant world. Universities began establishing botanical gardens, starting in Italy in 1545 before spreading widely across Europe during the seventeenth century.²³ These gardens served as centres for study, where extensive collections of plants – both medicinal and otherwise – were identified, described, categorised, cultivated and empirically documented. By creating detailed indexes of these natural specimens, botanical gardens marked a pivotal shift in the understanding of nature, laying the groundwork for modern taxonomic science. As Barton Levi St. Armand writes, the Latin root of the word *index* means “forefinger,” which not only places nature at humanity's fingertips but also evokes the gesture of pointing.²⁴ This act of designation reflects the broader role of botany and taxonomy in asserting control over the natural world; to point is to name, to fix in place, and ultimately to dominate. Such legacy persists today, framing nature primarily as an object to be measured, managed and dominated by the rational human subject.

By the late seventeenth century, botanical gardens had accumulated such extensive plant collections that botany became an independent scientific discipline.²⁵ Botanists developed innovative techniques to manage and preserve these specimens in response to the vast influx of exotic *naturalia* from newly discovered lands.²⁶ European voyages of exploration in the fifteenth century had opened routes to India and the Americas. The mercantile trade of the sixteenth and seventeenth centuries brought large quantities of natural goods and artifacts to Europe, fuelling commerce and economic prosperity.²⁷ Consumer demand for imported spices, such as pepper, cinnamon, ginger, cloves and nutmeg, as well as exotic medicinal and fragrant herbs, skyrocketed. By the end of the century, botanical gardens across Europe began to transplant and locally cultivate these foreign plants to generate higher economic profits. However, moving plants across oceans was difficult and risky. Long voyages exposed them to saltwater, dehydration, pests and drastic climate

²³ Lucia Tongiorgi Tomasi, “The Origins, Function and Role of the Botanical Garden in Sixteenth and Seventeenth-Century Italy,” *Studies in the History of Gardens and Designed Landscapes* 25, no. 2 (2005): 103–115, <https://doi.org/10.1080/14601176.2005.10435338>.

²⁴ Barton Levi St. Armand, “The Book of Nature and American Nature Writing: Codex, Index, Contexts, Prospects,” *Interdisciplinary Studies in Literature and Environment* 4, no. 1 (1997): 29–42.

²⁵ Tongiorgi Tomasi, “The Origins, Function and Role,” 104.

²⁶ Lukas Rieppel, “Museums and Botanical Gardens,” in *A Companion to the History of Science*, ed. Bernard Lightman (Hoboken, NJ: John Wiley & Sons, 2016): 238–251.

²⁷ Larry Silver, “Europe's Global Vision,” in *A Companion to Renaissance and Baroque Art*, ed. Babette Bohn and James M. Saslow (West Sussex: John Wiley & Sons, 2013), 97.

changes. To support the survival of the plants after their arrival in Europe, botanical gardens installed structures that regulated humidity and allowed light to enter. Known as hothouses, these structures were effectively early versions of modern greenhouses.²⁸ Though expensive to maintain, the economic profit generated and the political power that such profit secured more than justified their cost. This practical application of botany became known as “economic botany.”²⁹ In effect, botanical institutions embedded nature within economic systems, commodifying gardens and transforming them into ideological and commercial spaces as well as centres of scientific study.

As botanical inquiry and scientific exploration expanded, so did public fascination with nature, leading to the emergence of natural history museums as spaces where science, beauty, imperial ambition and the objectification of nature converged. The public exhibition of natural specimens in these museums during the late seventeenth century played a pivotal role in shaping new conceptions of nature. It reinforced the perceived divide between nature and culture and contributed to the construction of the natural world as a commodity fetish. These museums were often built thanks to vast private collections donated by affluent merchants and community elites to European universities.³⁰ As Lukas Rieppel writes, while the donations helped expand scientific knowledge, they also elevated donors’ social status and furthered their business interests by integrating them into elite intellectual networks.³¹

Museum displays of natural specimens were neither neutral nor objective. The display items were removed from their natural settings and placed in museums. Their presentation shaped the perception of what parts of nature were seen as important or worth saving, influencing both public understanding and cultural views about the value of the natural world.³² The objects were assigned new meanings such as economic value, scientific significance or exotic appeal. This curatorial process was not incidental to the development of natural history; it was foundational, and clearly shows how modern ideas about nature were shaped in tandem with the institutions and belief systems that mediated its representation. The Ashmolean Museum, founded by the University of Oxford in 1683, is an example of this entanglement.³³ Even before the public encountered the collection, nature had

²⁸ Rieppel, “Museums and Botanical Gardens,” 241.

²⁹ Rieppel, 238–251.

³⁰ Jeffrey Abt, “The Origins of the Public Museum,” in *A Companion to Museum Studies*, ed. Sharon McDonald (Malden, MA: Blackwell, 2006), 122–124, <https://doi.org/10.1002/9780470996836.ch8>.

³¹ Rieppel, “Museums and Botanical Gardens,” 238–251.

³² Rieppel, 238–251.

³³ Arthur MacGregor, “The Ashmolean as a Museum of Natural History, 1683–1860,” *Journal of the History of Collections* 13, no. 2 (2001): 125–144, <https://doi.org/10.1093/jhc/13.2.125>.

already been abstracted into a system of assessable items – categorised, catalogued and labelled. In this process, the natural world was transformed into a set of objects to be sorted, stored and displayed for the pleasure of the viewer’s gaze, all under the curatorial authority of the institution. This act of presentation did not merely reflect knowledge but actively produced a particular way of seeing nature as passive, fragmented and subject to human control.

The Ashmolean Museum was the first public institution to display natural history alongside a cabinet of curiosities or *Wunderkammer*.³⁴ While public exhibitions of art were not new, it was unusual to present them together with natural history in a single space and, crucially, to grant the general public unfettered access. Generally, such collections were privately held by elites who allowed only select visitors to view them as a means of displaying status and cultural refinement.³⁵ The Wunderkammer brought together a wide variety of objects representing the main areas of knowledge at the time, turning them into a striking visual display of wonder and beauty. *Naturalia*, *scientifica* and *artificialia* were exhibited together without a clear system of order or classification. This lack of structure not only challenged traditional hierarchies of knowledge, it also changed how viewers understood both the individual items and the wider world that those items reflected.³⁶ Exotic feathers, beaks, claws, ostrich eggs, rare plants, bones and precious stones were exhibited alongside scientific instruments and finely crafted artifacts made from materials such as ebony, ivory, amber, coral, agate and gold. These natural materials, fashioned into goblets, statuettes, sundials and other ornate items, emphasised nature’s beauty while also implying it could be enhanced by human ingenuity. In this context, nature was increasingly perceived through anthropocentric eyes – as raw material to be ordered, improved and possessed. The rarity and appeal of these objects sparked a growing desire to own them. As similar items started appearing in private shops, they became especially popular among the rising bourgeoisie, who collected them to show cultural sophistication and social status. Because they were associated with knowledge, beauty and rarity, these objects became highly sought-

³⁴ Abt, “The Origins of the Public Museum,” 123–125.

³⁵ Abt, 123–125.

³⁶ William B. Ashworth Jr, “The Revolution in Natural History: Natural History and the Emblematic World View,” in *The Scientific Revolution: The Essential Readings*, ed. Marcus Hellyer (Oxford: Blackwell, 2008), 130–156.

after commodities, signalling a significant shift that nature was valued no longer just as a divine creation but as something to be collected and owned.³⁷

Throughout the eighteenth century, botanical science and natural history continued to play a key role in shaping evolving ideas about nature, particularly through the influential work of Carl Linnaeus. Linnaeus not only officially placed humans within the animal kingdom by naming the species *Homo sapiens*, but he also created the basis for modern classification systems and helped lay the foundation for ecology as a way of understanding the structured relationships within the natural world.³⁸ In his 1749 essay “The Oeconomy of Nature,” Linnaeus affirmed the existing belief in nature as a divinely created interconnected mechanism.³⁹ Yet his view departed from earlier mechanistic models that saw nature as lifeless and externally driven. Instead, he envisioned a dynamic, self-regulating system in which nothing occurred by chance.⁴⁰ For Linnaeus, each species had a particular role to play, food chains maintained their balance, and prey species were not at risk of disappearing because they sustained their population numbers through instinctive reproduction patterns. In this model, nature was organised according to its own internal logic and vital purpose, as if guided by its own intelligence.⁴¹

Although Linnaeus was systematic in his descriptions, he often described botanical anatomical parts with poetic metaphor. He famously referred to the calyx as the flower’s “nuptial bed,” and described nine stamens surrounding one pistil as “nine men in the same bride’s chamber with one woman.”⁴² These vivid analogies reflect pre-Romantic sensibilities and reveal an aesthetic resistance to the cold rationalism of thinkers like Descartes, whose view of animals as machines had implicitly sanctioned cruel experimentation.⁴³ For Linnaeus, to deny nature vitality and intelligence was not only scientifically flawed but ethically dangerous.⁴⁴ However, despite Linnaeus’s holistic framing, elements of his work were later interpreted in more instrumental terms. The original Greek meaning of *oekonomia* – “household management” – allowed “The Oeconomy of Nature” to be read as a system for

³⁷ Amy Boesky, “‘Outlandish-Fruits’: Commissioning Nature for the Museum of Man,” *ELH* 58, no. 2 (1991): 305–330.

³⁸ Jeffrey H. Schwartz, “What Constitutes Homo Sapiens? Morphology Versus Received Wisdom,” *Journal of Anthropological Sciences* 94 (2016): 65–80.

³⁹ Worster, *Nature’s Economy*, 33–34.

⁴⁰ Worster, 33–34.

⁴¹ Worster, 35–36.

⁴² Gerald Weissman, “Giving Things Their Proper Name: Carl Linnaeus and W. H. Auden,” *The FASEB Journal* 21, no. 7 (2007): 1285–1289.

⁴³ Worster, *Nature’s Economy*, 40.

⁴⁴ Worster, 39–41.

managing nature itself.⁴⁵ This managerial outlook reinforced instrumental views of nature as a resource to be ordered and controlled for human benefit. Although such interpretations still exist, they have increasingly been challenged by more environmentally aware perspectives.⁴⁶ The vision of nature as a living, interdependent system first suggested by Linnaeus gradually evolved into the modern science of ecology, which continues to inform ecological thought and environmental activism, especially about the importance of biodiversity, conservation and the interdependence of living systems.⁴⁷

By the late eighteenth century, the Industrial Revolution had spread from England across Europe, catalysing further changes in how humanity understood nature. Wood was the main fuel, and charcoal was used to smelt iron. However, as Francis Klingender notes, rising industrial demand outstripped the available supply of timber, leading to widespread deforestation.⁴⁸ The scarcity of wood prompted the switch to coal as the main source of fuel. This meant that factories had to be located near rivers to harness waterpower and near mines to ensure a steady supply of coal. As James Watt's improvements to the steam engine enabled the generation of mechanical power on-site, factories were able to relocate anywhere. As a result, industrial development moved forward significantly. Nevertheless, the transportation of coal remained a logistical challenge until the steam locomotive revolutionised coal logistics and catalysed further industrial expansion. These developments transformed both urban and rural landscapes and accelerated urban industrialisation as factories proliferated in cities.⁴⁹

Agricultural regions were also restructured to meet the rising demand for food and raw materials. From the 1750s onward, a series of enclosure laws allowed landlords to privatise common grounds, effectively terminating traditional rights that had allowed local people to graze livestock, gather firewood and cultivate small plots.⁵⁰ Rising rents displaced many farmers from their ancestral land, forcing them into cities to work in mechanised industries. By the end of the century, over six million acres had been allocated for private use, divided by new roads and fences that changed both the visual appearance and social use

⁴⁵ Worster, 37.

⁴⁶ Merchant, *The Death of Nature*, 103.

⁴⁷ Worster, *Nature's Economy*, 37.

⁴⁸ Klingender, *Art and the Industrial Revolution*, 4.

⁴⁹ John Bailey, "The Steam Age: Evolution of Steam Engines and the 1st Steam Locomotive," in *Inventive Geniuses Who Changed the World* (Cham: Springer International, 2021), 23–36, https://doi.org/10.1007/978-3-030-81381-9_3.

⁵⁰ Michael Turner, "Enclosures in Britain 1750–1830," in *The Industrial Revolution: A Compendium*, ed. Leslie Clarkson (London: Macmillan Education UK, 1984), 211–295.

of rural areas.⁵¹ Land became a commodity to be bought and sold as private property rather than shared as a collective resource. Meanwhile, expanding urban environments encroached on natural habitats with little concern for ecological destruction.⁵² Nature became increasingly viewed through a utilitarian lens, as something to be owned, exploited and depleted.

These gradual yet significant transformations reshaped not only perceptions of nature but also humanity's relationship with it. Urban expansion, the decline of traditional rural life, mechanised production, land commodification and the spread of factories increasingly immersed individuals in culture while distancing them from the natural world. For many, the disconnection from nature fostered feelings of isolation and alienation. Other simultaneous changes reinforced such feelings. Enlightenment *philosophes* mounted fierce critiques of religion, advocating a shift of faith towards human reason as a better guiding moral principle.⁵³ Simultaneously, the emerging middle class embraced the material prosperity generated by industrial growth, elevating pleasure, luxury and social status as markers of success. Through their conspicuous displays of wealth and socially constructed codes, the bourgeoisie epitomised this detachment from nature, often embodying what Sharon Stanley describes as a turn toward a blunt rationality bordering on cynicism and corrosion.⁵⁴ Amid this cultural climate, a counter-current began to emerge – a yearning for simplicity and authenticity.⁵⁵ This impulse to escape the superficiality of urban existence and reconnect with a more natural way of life sparked an aesthetic and philosophical reimagining of nature that would soon find powerful expression in art and thought.⁵⁶

Jean-Jacques Rousseau was one of the first philosophers to challenge the inauthenticity and moral emptiness he saw in the bourgeois values of late eighteenth-century society, particularly its cynical sense of detachment, obsession with wealth, and reliance on artificial social conventions.⁵⁷ For Rousseau, nature and human nature are fundamentally aligned, as both are free and good. In *Émile, or On Education* (1762), Rousseau begins with “everything is good as it comes from the hands of the Author of Nature; but everything

⁵¹ Worster, *Nature's Economy*, 13.

⁵² Worster, 13.

⁵³ Sharon A. Stanley, “Hermits and Cynics: Rousseau and Rameau's Nephew,” in *The French Enlightenment and the Emergence of Modern Cynicism* (New York: Cambridge University Press, 2012), 27, <https://ebookcentral-proquest-com.ezproxy.library.sydney.edu.au/lib/usyd/detail.action?docID=866905>.

⁵⁴ Stanley, 128.

⁵⁵ Hadot, *The Veil of Isis*, 262–263.

⁵⁶ Hadot, 262–263.

⁵⁷ Stanley, “Hermits and Cynics,” 130.

degenerates in the hands of man”.⁵⁸ The opening line sets the tone for the central argument that human beings are born naturally good and are corrupted by the artificiality imposed by culture and society. Though Rousseau invokes God, he clarifies shortly after that the guiding principle of education must be to follow the order of nature, thereby aligning the divine with the natural world.⁵⁹ As the notion that the human condition should mirror the spontaneity of nature recurs throughout the text, nature is framed as the trustworthy example of moral development and personal authenticity – the standard by which all social conventions should be measured.

Rousseau’s ideas marked a pivotal turning point in Western thought, as they shifted the basis of moral guidance from organised religion to nature. Rousseau posited nature itself as a living reflection of divine perfection, so that moral virtue became no longer based on the image of God but on the image of nature. Through this lens, nature became the new standard for truth and morality. This view evolved into the Romantic ideal of nature as pure, authentic and morally exemplary – an ideal still embedded in modern attitudes towards nature. In *Émile*, Rousseau also draws a strong connection between nature and childhood, as he portrays the child as naturally innocent and free. Like nature, which operates freely and without restriction, the child – Émile – should be allowed to grow and play without fear or interference.⁶⁰ In this way, both childhood and nature become powerful metaphors for purity, spontaneity and moral exemplarity – associations that would later be embraced by Romantic artists and solidified into cultural myths that remain deeply embedded in modern thought. Even today, spontaneous behaviours are often considered “natural” and therefore more authentic, while learned or cultivated behaviours are viewed as artificial, thus less genuine or even false. Likewise, anything untouched by urban or cultural development, be that fruit eaten straight from the tree or life in a rural village, is idealised as “natural.” Through his writings, Rousseau contributed to shaping a potent romantic mythology around nature and childhood that continues to inform how humanity perceives the natural world.

The Romantic conceptions of nature that began to emerge at the end of the eighteenth century were further shaped by the instability that followed the French Revolution. For much of the early modern period, France had been seen as a symbol of political permanence, order and centralised authority. This vision of stability was physically and aesthetically encoded in

⁵⁸ Jean-Jacques Rousseau, *Émile, or On Education*, trans. William H. Payne (New York: D. Appleton & Co., 1899), 4.

⁵⁹ Rousseau, 4–5.

⁶⁰ Rousseau, 41–45.

the highly structured gardens of Versailles.⁶¹ The rigid symmetry of the French parterres was more than mere decoration. It visually reinforced a political order in which the monarch's dominion and control extended across society, culture, and even the natural world. The gardens epitomised not only the grandeur of the French state, but also the strength of its monarchy.⁶² This cultivated vision of order shaped European ideals of natural beauty, as landscapes were admired only when tamed and rigidly structured, whereas the disorderliness of wilderness was dismissed as ugly.⁶³ In early eighteenth-century England, however, Lord Shaftesbury rejected the idea that only refined or controlled landscapes were beautiful. Shaftesbury argued that, whether wild or cultivated, all of nature was worthy of admiration because all of it was God's creation.⁶⁴ While his conception of beauty emphasised harmony rather than awe, Shaftesbury's rejection of rigid aesthetic norms helped lay the groundwork for new conceptions of the natural world. This shift paved the way for Romanticism's later embrace of the sublime – a view of nature as vast, wild, and emotionally overwhelming – emerging as confidence in rational order gave way to growing uncertainty.

The violent upheavals of the French Revolution plunged much of Europe into a crisis of social, political and spiritual stability. The Reign of Terror disrupted the sense of security that had been associated with the *ancien régime*. The bloodshed and chaos that it caused not only compelled people to question the revolutionary ideals of freedom and equality but also raised doubts about the reliability of Enlightenment promises of reason, progress and a more just society. At the same time, the decline of religion left many searching for meaning in a world where old certainties were rapidly fading. Traditional social structures were uprooted, industrialisation intensified the alienation from nature, and religious assurances waned, leaving individuals to face moral and existential dilemmas alone. Enlightenment ideals of order, rationalism and progress were increasingly inadequate to address this psychological and spiritual crisis unfolding across Europe. Within this context, the idea of untamed nature began to carry new symbolic weight. Spontaneity and unpredictability resonated with emerging Romantic values of imagination, individuality and emotional intensity – the very qualities that opposed Enlightenment control and rationality. Romanticism reimagined nature as a source of emotional authenticity, inner truth and spiritual transcendence, offering access

⁶¹ Thacker, *The Wildness Pleases*, 4–6.

⁶² Thacker, 4–6.

⁶³ Thacker, 3.

⁶⁴ Thacker, 12–13.

to the divine outside organised religion.⁶⁵ Over time, these conceptions solidified into enduring cultural myths so profoundly embedded in modern consciousness that they continue to shape how nature is perceived to this day.

Amid this broader crisis of meaning, the sublime emerged as a powerful aesthetic response through which artists and thinkers engaged with nature's mystery and transcendence. One of these figures is Caspar David Friedrich, whose work *The Monk by the Sea* (1808) (fig. 1.1) exemplifies this shift, as the painting offers a meditation on the mysterious and spiritual dimensions of the natural world. Friedrich's landscape is stripped of familiar visual markers such as trees or paths. There are no recognisable points of reference to guide the viewer. There is only a large expanse of sea and sky. This absence of form creates an almost supernatural space, suspended between earth and heaven – a space where all sense of certainty disappears. As the landscape resists understanding and eludes description, it evokes a sense of awe and anxiety all at once.⁶⁶ The solitary figure of the monk is situated within nature yet it also seems to be separate from it. It stands at a distance against the vast and empty landscape, reflecting on the overwhelming and ungraspable enormity. As this positioning places the human subject in a precarious position, it undermines Enlightenment ideals of nature as something rational, ordered and fully knowable. Effectively, rather than humans being in control of nature, Friedrich suggests the opposite: that humans are subject to it, and that nature exists beyond human comprehension. From this perspective, *The Monk by the Sea* also reiterates the idea that human experience of nature is always mediated – shaped by historical and cultural filters – and always elusive in its fullness. Effectively, the work expresses the existential disconnection between modern humanity and the natural world, a condition that continues to inform contemporary ecological consciousness.⁶⁷

Another influential figure who helped shape new conceptions of nature in the nineteenth century was Henry David Thoreau, one of the earliest thinkers to reflect on the moral and spiritual dimensions of humanity's relationship with the natural world. A naturalist, field ecologist and philosopher, Thoreau documented his experiences of the natural world in journals that were posthumously published in 1906 across fourteen volumes, often

⁶⁵ Mark Coeckelbergh, "Romanticism," in *New Romantic Cyborgs: Romanticism, Information Technology, and the End of the Machine* (Cambridge, MA: MIT Press, 2017), 28.

⁶⁶ Andrea Meyertholen, "Apocalypse Now: On Heinrich von Kleist, Caspar David Friedrich, and the Emergence of Abstract Art," *The German Quarterly* 86, no. 4 (Fall 2013): 404–420.

⁶⁷ Julian Jason Haladyn, "Friedrich's 'Wanderer': Paradox of the Modern Subject," *RACAR: Revue d'Art Canadienne/Canadian Art Review* 41, no. 1 (2016): 47–61.

accompanied by his ecological sketches.⁶⁸ These writings reveal a reverent engagement with wild nature as a source of vitality, freedom and authenticity. Thoreau consistently championed wilderness over cultivated society, insisting that nature embodied truths deeper than those offered by civilisation.⁶⁹ According to Lawrence Buell, Thoreau found poetry and wonder even in the gravel between railway tracks, describing the grains of sand that separate pebbles and shield them from erosion with as much awe as he reserved for mountains or forests.⁷⁰

Thoreau's attention to small details reflects his belief that all of nature is worthy of protection, advocating stewardship rather than exploitation.⁷¹ His famous assertion that "every creature is better alive than dead" encapsulates, as Donald Worster explains, Thoreau's resistance to the objectification of nature by science and industry, both of which he believed had eroded respect for the intrinsic value of non-human life. At a time when industrialisation and urban expansion were rapidly transforming European landscapes, Thoreau warned against North America taking a similar approach.⁷² Before colonisation, North America was densely forested. However, by 1880, Massachusetts alone had lost 60 per cent of its forests as settlers cleared land for farming and infrastructure, using timber as both fuel and resource.⁷³ In response to this destruction, Thoreau advocated for the protection of wilderness areas both as a safe place for wildlife and as a spiritual refuge for humans. His vision later inspired President Theodore Roosevelt, whose policies helped to preserve over 60 million hectares of forest and contributed to the emergence of conservation movements.⁷⁴ Nevertheless, Thoreau's idealisation of the wilderness as a realm above and beyond civilisation also gave rise to enduring ideological interpretations.⁷⁵ For nineteenth-century pioneers, this wilderness became the ultimate frontier, a space to be crossed, tamed and conquered. As such, while Thoreau's vision nurtured a deep reverence for nature, it also

⁶⁸ St. Armand, "The Book of Nature," 29–42.

⁶⁹ Henry David Thoreau, *Walking* (New York: Dover, 2019).

⁷⁰ Lawrence Buell, "Representing the Environment," in *The Environmental Imagination: Thoreau, Nature Writing, and the Formation of American Culture* (Cambridge, MA: Belknap Press, 1996), 105–107.

⁷¹ Worster, *Nature's Economy*, 63–76.

⁷² LaFreniere, *The Decline of Nature*, 278.

⁷³ Worster, *Nature's Economy*, 67.

⁷⁴ Benjamin W. Redekop, "Embodying the Story: Theodore Roosevelt's Conservation Leadership," in *Environmentally Sustainable Leadership* (Cheltenham: Edward Elgar, 2024), 53–80, <https://doi.org/10.4337/9781800374058.00008>.

⁷⁵ Yrjö Haila, "'Wilderness' and the Multiple Layers of Environmental Thought," *Environment and History* 3, no. 2 (June 1997): 129–147.

unintentionally intersected with ideologies of national expansion and conquest, thereby reinforcing enduring patterns of human dominance over nature.⁷⁶

Nature as a site continually shaped by political and cultural ideologies is also patently manifest in John Constable's landscapes, which express a melancholic view of a disappearing rural past. In paintings like *The Wheat Field* (1816) (fig. 1.2), Constable responds to the enormous disruptions brought about by the Industrial Revolution as it engages with agricultural labour and social change. In this work, the rural workers appear to be an integral part of the land rather than a dominating force. Such a focus on local scenes and everyday life did more than depict nature, its elements, and the human connection with it. The work played a role in shaping how people perceived and valued England's countryside and rural traditions. As Elizabeth Helsinger writes, Constable's paintings became cherished symbols of an English national identity rooted in nostalgia at a historical moment when industrialisation and mass migration to cities created a sense of alienation.⁷⁷ Even though Constable expressed an emotional connection to place, his rural depictions became a site for nationalist narratives rooted in the concept of the native land, exposing the links between nature, visual culture, politics and ideology.

As a further illustration of how nature can be appropriated for ideological purposes, early in the twentieth century, Walther Darré, the Nazi Minister of Food and Agriculture, grounded his proto-fascist racial theories in a conception of nature that linked identity, land and purity.⁷⁸ He argued that true nobility lay in blood, or biological lineage, rather than in artificial titles. For Darré, farmers embodied such purity by being physically connected with the soil and spiritually untainted by the perceived corruption of urban life and cultural hybridity.⁷⁹ Through these ideas, the farmer became the archetype of the authentic German. From this framework, Darré developed the infamous ideology of *Blut und Boden*, "blood and soil," which equated ethnic purity with geographical origin.⁸⁰ As a result, Nature, especially the land, became an ideological instrument of nationalism, providing what was framed as

⁷⁶ Roderick Nash, "The American Wilderness in Historical Perspective," *History Newsletter* 6, no. 4 (Winter 1963): 2–13.

⁷⁷ Elizabeth K. Helsinger, "Constable: The Making of a National Painter," in *Rural Scenes and National Representation: Britain, 1815–1850* (Princeton, NJ: Princeton University Press, 1996), 44–45, <https://doi.org/10.1515/9781400864379>.

⁷⁸ R. W. Darré, "The Farmers and the State," in *Nazi Ideology Before 1933: A Documentation*, ed. Barbara Miller Lane and Leila J. Rupp (New York: University of Texas Press, 1978), 131–135, <https://doi.org/10.7560/755123-027>.

⁷⁹ Darré, 131–135.

⁸⁰ Jacob A. Miller-Klugesherz, "Preserving the Rural Race: The Enduring Appeal to 'Blood and Soil,'" in *The Rhetoric of Fascism*, ed. Nathan Crick (Tuscaloosa: University of Alabama Press, 2022).

biological justification for racial superiority. The soil was reimagined as a sacred inheritance to create a deep emotional connection between people and place. This rhetoric was crucial in securing rural political support and played a decisive role in the Nazi Party's electoral victory in 1932.⁸¹ The ideal of *patria*, or "fatherland," reinforced the notion that the birthplace conferred both origin and belonging. Tied closely to broader nationalist ideologies, this concept helped position nature as an active force in the construction of racial nationalism. The connection to land was used to legitimise exclusion, conquest and genocide, all under the guise of natural entitlement.

Conceptions of nature, whether as a romantic ideal, an ideological tool or a theistic force, have continually emerged, shifted and evolved in response to material conditions, the perceptions that such conditions generate, and the sociocultural practices that they shape. Nature, then, is not a fixed or self-evident reality but a historically constructed category, always defined in relation to its perceived opposite: culture. Despite the progress of science and technology, the natural world continues to resist comprehension or explanation. It remains, in the end, other – unknowable, alien and irreducible to human understanding. As Yrjö Haila observes, "nature cannot be purified because it exists as a category in our thought, that is, as a cultural construct."⁸² Ultimately, nature is so conceptually elusive that it can only be apprehended through metaphor. This makes it a space of ongoing interpretation and projection, where meaning is assigned rather than revealed.

⁸¹ Clifford R. Lovin, "Blut und Boden: The Ideological Basis of the Nazi Agricultural Program," *Journal of the History of Ideas* 28, no. 2 (April–June 1967): 279–288.

⁸² Haila, "'Wilderness,'" 129–147.

2. RHETORIC, CONTRADICTIONS AND MISPRISIONS

The notion that certain products and technologies can reverse climate change is deceptive because the environmental sustainability discourse is complex and filled with contradictions. Carbon fibre is a good example. On the one hand, the strength and durability of carbon fibre render it ideal for manufacturing wind turbine blades, which are used to produce clean energy from wind. It is also ideal for use in the automotive and air transport industries because its lightweight properties mean fuel efficiency, and therefore lower carbon dioxide (CO₂) emissions.¹ On the other hand, the manufacturing process of carbon fibre releases substantial amounts of CO₂ due to the high energy input needed for generating the extremely high temperatures required to produce it.² Even if clean energy were to be used to generate the heat, carbon fibre would still be environmentally problematic because its recycling is a challenge. It is a composite substance, difficult to reconstruct in such a way that it provides the same functionality.³ In short, at the end of its life, carbon fibre is likely to end up mostly in landfill and create an ecological nightmare through indirect greenhouse gas emissions (GHG) ensuing from soil contamination.

GHGs are the primary driver of climate change. They are difficult, if not impossible, to avoid as they are deeply embedded in every stage of industrial production, from the extraction of resources through to the manufacture, consumption and disposal – the cradle-to-grave cycle of consumer goods, or *value chain*. Even recycling inevitably involves polluting processes, as products and technologies framed as “clean,” “green,” “eco-friendly” or “natural” generate emissions not only during production, but also in end-of-life treatment. Problematically, this truth is obscured when environmental narratives are co-opted by commercial interests, leading to the false sense of security that sustainable ecological outcomes can be achieved within a deregulated capitalist market – the very system responsible for the climate crisis. Such an expectation is fundamentally paradoxical. Economic growth remains the overriding priority, which creates an inherent conflict of

¹ Mark Harris, “Carbon Fibre: The Wonder Material With a Dirty Secret,” *The Guardian*, March 22, 2017, <https://www.theguardian.com/sustainable-business/2017/mar/22/carbon-fibre-wonder-material-dirty-secret>.

² Amiruddin Isa et al., “A Review on Recycling of Carbon Fibres: Methods to Reinforce and Expected Fibre Composite Degradation,” *Materials* 15, no. 14 (July 2022): 4991, <https://doi.org/10.3390/ma15144991>.

³ Jonny Hazell, *Getting it Right From the Start: Developing a Circular Economy for Novel Materials* (London: Green Alliance, 2017), 13, accessed May 5, 2023, <https://green-alliance.org.uk/publication/getting-it-right-from-the-start-developing-a-circular-economy-for-novel-materials/>.

interest. As a result, the understanding of concepts such as nature, the natural and environmental sustainability is increasingly shaped by the language of marketing to serve economic interests. Consumers come to accept these distorted notions, and the environmental question becomes mired in complexity and contradiction.

In the sections that follow, several examples expose some of the dead ends that pervade the sustainability discourse. Although few, these examples span vastly different realms of activity. Collectively, they demonstrate that the challenges of achieving environmental sustainability do not stem from isolated issues but from the structural logic of cultural, economic and industrial systems. The examples necessarily highlight the difficulties that confront environmental activism at large and, by extension, environmental art as a form of activism, given that both operate within these same systems that constrain meaningful ecological action. The discussion explores how the rhetoric of the natural and the myth of nature as purity are marketed to obfuscate the environmental ramifications of production; how initiatives such as Fairtrade certification, while well-intentioned, struggle to deliver genuine sustainability; and how solar panels, despite being framed as clean technology, still rely on natural resources for their manufacture and pose ecological threats at the end of their life cycle. The discussion is supported by an analysis of Slavoj Žižek's ideas to illustrate how eco-consumerism functions as an ideology that masks the root causes of climate change while perpetuating consumption and generating profit.

The Myth of Nature as Purity

The Fiji Water website states: “bottled at the source, untouched by man, until you unscrew the cap.”⁴ The corresponding video advertisement reinforces this narrative with visuals of an untouched paradise: a dense tropical forest in the foreground, a volcano in the distance, and lightning striking across a dark, cloudy sky. The screen then fills with large raindrops that morph into a serene, lusciously green, primordial landscape. A large butterfly flutters gently above a white flower identifiable as *Spathiphyllum*, commonly known as the peace lily. A warm, male voice narrates how rain falls on a remote tropical island, where it is naturally purified by volcanic rock until it reaches the aquifer and, ultimately, the bottle.⁵

Though brief, the advertisement's every word, image and note of its romantic soundtrack revolve around a single concept: purity. The claim that the rain falls on a “remote

⁴ “The Water,” Fiji Water, accessed July 16, 2025, <https://www.fijiwater.com/the-water>.

⁵ “Clouds,” Fiji Water YouTube Channel, published August 18, 2022, accessed September 30, 2022. <https://www.youtube.com/watch?v=qtxMLjKpj8M>.

tropical island” implies that the water is sourced far from urban environments. The notion of this distance creates an association between purity and nature, in opposition to its tainted counterpart, culture. Throughout this visual journey from clouds to bottle, Fiji Water is portrayed as untouched by human hands. The video is a carefully constructed narrative that avoids any reference to technology or manufacturing. Instead, it gives the urban consumer the false impression of purchasing an unspoiled substance straight from nature, delivered to the shopping cart without the mediation of chemicals and industry. Fiji Water is presented as an untouched essence for sale.

Fiji Water is just one example of how a carefully constructed and highly circumscribed concept of nature, or Nature, is marketed to consumers, with rhetoric taking centre stage. Such narratives mislead consumers into believing that these products are free from industrial processes and, therefore, have little or no environmental impact. This misunderstanding shapes how society perceives environmental sustainability. The powerful myth of nature as pristine, innocent and untouched is deliberately used to obscure key facts, notably the extensive industrial intervention and resulting emissions involved. By the time bottled water reaches the consumer, it has undergone multiple processes such as filtering, disinfecting, analysis, bottling, international shipping and local distribution, along with refrigeration in stores, all of which generate greenhouse gases. These processes use energy and resources, which result in emissions. Every part of the process, no matter how apparently insignificant, adds to the total carbon footprint. The bottles and lids are made from plastic, and even small details like printing and attaching labels require materials and energy. A 2009 report revealed that the production of 33 billion litres of water sold in the US in 2007 required between 32 and 54 million barrels of oil to generate the necessary energy. The report takes into account the stages of production from water treatment and manufacturing of plastic bottles to bottling, sealing, transporting and refrigeration at retail point.⁶

It is evident that despite the rhetoric of nature as pure and pristine, the life cycle of bottled water is far from environmentally clean. Moreover, after consumption, many empty plastic bottles are discarded. Globally, only about 10% of polyethylene terephthalate (PET) –

⁶ P. H. Gleick and H. S. Cooley, “Energy Implications of Bottled Water,” *Environmental Research Letters* 4, no. 1 (2009): 6, <https://iopscience.iop.org/article/10.1088/1748-9326/4/1/014009>. The study was based on bottled water imported and consumed in the United States. The energy required varied predominantly according to the locality from which the water was imported. For example, if the product came from the Pacific area, it required more fuel to transport than locally bottled water. Therefore, it required more energy.

the plastic commonly used for bottled water – is recycled.⁷ Considering that approximately 20 million metric tons of PET are produced each year for bottled beverages, roughly 18 million metric tons end up incinerated, in landfills, or polluting waterways and oceans annually.⁸ It is difficult to truly grasp the enormity of this figure, or the vast space required to accommodate such quantities of waste. Not only that, discarded plastic bottles take over five hundred years to break down. Those that end up in waterways disintegrate into smaller pieces, poisoning non-human creatures that mistake them for food.⁹

Fiji Water, like many other companies, claims environmental sustainability by introducing recycled plastic – rPET – for their bottles, though often not for the lids.¹⁰ Recycled plastic helps reduce environmental harm since it cuts down on the need for oil and energy, but this only works if enough plastic bottles are collected and recycled, otherwise there is not enough rPET to use. Sustainability efforts remain ineffective if recycling infrastructure is inadequate. Moreover, recycling PET involves additional processes and chemicals.¹¹ High temperatures, and therefore high energy, are used to break down the polymer chains. Chemical compounds known as chain extenders are added to restore the plastic's strength. A recent study reveals that some of these compounds, such as isocyanates and maleic anhydrides, leach toxic substances into the soil when the bottles are eventually discarded.¹² This contamination harms biodiversity and contributes to climate change.

It becomes clear that buzzwords such as “pure,” “green,” “eco-friendly,” and “natural” often serve to obscure important environmental facts about commodity production. These popular marketing terms are used to make products sound environmentally friendly, but they often hide the real environmental costs of manufacturing those products. Consumers are led to believe that by choosing these items they are practising eco-consumption and helping to slow global warming, but ultimately, the meanings conveyed by such words are utopian fantasies that fetishise environmental discourse.¹³ A careful evaluation of any

⁷ Clark Lundell and Joyce Thomas, “PET: Polyethylene Terephthalate – The Ubiquitous 500 ml Water Bottle,” in *Advances in Industrial Design*, eds. Giuseppe di Bucchianico, Cliff Sungsoo Shin, Scott Shim et al. (Cham: Springer International Publishing, 2020), 248–254, https://doi.org/10.1007/978-3-030-51194-4_33.

⁸ Lundell and Thomas, 249.

⁹ Lundell and Thomas, 249.

¹⁰ “Sustainability,” Fiji Water, accessed October 2, 2022, <https://www.fijiwater.com/pages/sustainability>.

¹¹ “Recycled rPET Facts,” International Bottled Water Association, accessed October 2, 2022, <https://bottledwater.org/rpet-facts/>.

¹² Xinyu Li, Uingxin Chen, Wei Gao et al., “Prominent Toxicity of Isocyanates and Maleic Anhydrides to *Caenorhabditis Elegans*: Multilevel Assay for Typical Organic Additives of Biodegradable Plastics,” *Journal of Hazardous Materials* 442 (2023): 130051, <https://doi.org/10.1016/j.jhazmat.2022.130051>.

¹³ Eric Swyngedouw, “The Unbearable Lightness of Climate Populism,” *Environmental Politics* 31, no. 5 (2022): 904–925, <https://doi.org/10.1080/09644016.2022.2090636>.

product's entire value chain reveals that all consumption contributes to ecological problems, albeit to varying degrees. However, consumers readily embrace these narratives, no matter how misleading they are. Philosopher Slavoj Žižek calls this cognitive dissonance “fetishistic disavowal,” which is characterised by a refusal to confront facts and a preference to believe in constructed narratives that blatantly lack credibility.¹⁴ This denial helps individuals avoid facing an overwhelming reality in which they feel powerless.¹⁵ It also serves to rationalise the acceptance of the unacceptable, especially when there is an unwillingness to sacrifice convenience.¹⁶ In this way, the purchase is justified, and the moral responsibility to act is conveniently ignored.¹⁷

It is no secret that eco-consumerism functions as an ideology that allows the structural causes of climate change to persist. According to Žižek, ideology acts as the mask of the “background noise.”¹⁸ When ethical consumption is presented as a solution to climate change, it becomes the mask that conceals the root of the environmental crisis: the capitalist imperative of exponential economic growth, which paradoxically requires endless consumption. Eco-friendly sustainability narratives thus become deliberate distractions. Sometimes these claims are blatantly deceptive, commonly known as *greenwashing*. Yet the false sense of security they provide fuels persistent consumer disavowal, which in turn diminishes feelings of guilt. This process undermines – if not entirely extinguishes – the revolutionary and emancipatory potential that might arise from recognising the contradictions within the system. This is not to say that adopting measures to reduce emissions is wrong. Instead, the belief that consumer power alone is an effective political tool is illusory. The notion that any type of consumption, including eco-consumerism, is environmentally harmless is disingenuous. All consumption causes environmental harm, albeit to different extents. Therefore, eco-consumerism contributes to the problem, even though it is disguised as a solution. It is an illusion that sustains the very system it claims to challenge.

The Contradictions of Eco-labelling: Fairtrade

The Fairtrade label is an official certification system that promotes fairness by ensuring the protection of the environment, decent working conditions and better pay for farmers in

¹⁴ Jon Bailes, “Bridging the Gap: Cynical Disavowal and its Rationalizations,” *Journal of Political Ideologies* 25, no. 1 (2020): 94, <https://doi.org/10.1080/13569317.2020.1699715>.

¹⁵ Swyngedouw, “The Unbearable Lightness of Climate Populism,” 905.

¹⁶ Bailes, “Bridging the Gap,” 94.

¹⁷ Žižek, *Living in the End Times*, 4.

¹⁸ Žižek, 4–6.

developing countries. Fairtrade supports the production of organic goods such as coffee and cocoa, which are traded with first-world markets. The concept of sustaining low-income countries through trade rather than aid began to take shape in 1946, with sporadic initiatives selling handicrafts from Asia and Latin America in Europe and the United States. Support for more equitable trade with the Global South gained momentum at the United Nations Conference on Trade and Development held in Delhi in 1968, where the slogan “trade not aid” was adopted.¹⁹ Non-governmental organisations (NGOs) gradually formed formal networks to connect producers in developing countries with importers in industrialised nations, ensuring fair prices and conditions.²⁰ However, the promise of fairness embedded in Fairtrade encounters problems and contradictions because it operates within the logic of the capitalist market, thus it is governed by its priorities and strategies.

The first official Fairtrade certification system was established in the Netherlands in 1988. It was created because coffee farmers were struggling with low prices and needed to earn more to survive. At the time, big global companies had a lot of control over coffee pricing, largely influenced by the International Coffee Agreement, a global trade deal that did not always benefit small-scale farmers. These unfair conditions in the global coffee trade led to the creation of the Max Havelaar Fairtrade coffee label.²¹ Following this, Fairtrade labelling expanded globally, with numerous initiatives emerging worldwide.²² In 1997, all such labels were consolidated under Fairtrade Labelling Organisations International (FLO), which continues to promote fair trade from developing countries to this day.

Despite its good intentions and many positive outcomes, the Fairtrade brand is fraught with contradictions. By its very existence, Fairtrade acknowledges that neoliberal capitalism is a system fundamentally built on inequality and the exploitation of human and non-human capital to generate profit. However, ethical consumption operating within this system fails to address the root cause of unfairness because it does not challenge the exploitative nature of the capitalist market. Instead, it reinforces the problem because it frames ethical markets as an option for individual consumers rather than a collective moral obligation. From this

¹⁹ “When Did It All Begin?,” World Fair Trade Organization Europe, accessed October 1, 2023, <https://wfto-europe.org/when-did-it-all-begin/#:~:text=The%20earliest%20traces%20of%20Fair,the%20first%20Fair%20Trade%20Organization.>

²⁰ Elizabeth Anne Bennett, “A Short History of Fairtrade Certification Governance,” in *The Processes and Practices of Fair Trade: Trust, Ethics and Governance*, ed. Brigitte Granville and Janet Dine (London: Routledge, 2012), 45.

²¹ Bennett, 46–47.

²² Gavin Fridell, *Fair Trade Coffee: The Prospects and Pitfalls of Market-Driven Social Justice* (Toronto: University of Toronto Press, 2007), 54.

perspective, Fairtrade certification reduces equanimity to a palliative solution, by masking the deeper structural issues and allowing such problems to continue. In essence, Fairtrade functions as an ideology.

Commodities qualify for Fairtrade certification by meeting specific social, environmental and economic criteria. Socially, production must occur under specific working conditions, such as cooperatives, for example, and follow non-discriminatory labour practices.²³ Environmentally, agricultural methods must be based on the responsible management of water, the preservation of biodiversity, a minimal use of pesticides and the total absence of genetically modified organisms. These practices help maintain a balanced ecosystem and healthy soil, which are essential for long-term sustainable farming and stable livelihoods.²⁴ Economically, Fairtrade sets a minimum market price to guarantee producers economic stability amid volatile markets.²⁵ Additionally, companies purchasing Fairtrade products must pre-finance producers upon request, providing essential access to capital.²⁶ This gives farmers better access to capital, which helps them plan, invest and survive financially. These extra costs are usually added to the final product price, meaning that consumers pay more for Fairtrade goods. The premium goes directly to producers to improve wages and working conditions, and also funds cooperative investments in business improvements, such as training, and community projects like schools.²⁷

Fairtrade does not, however, challenge neoliberal globalisation. Instead, it functions within its framework, by bringing together two different groups: the world of capital, which consists of corporations, investors, agricultural traders and retailers, and vulnerable groups such as small producers and labourers.²⁸ Corporations that align with the Fairtrade model do so not out of solidarity but because it grants them access to niche markets of ethically conscious consumers while simultaneously enhancing their public image through “ethical washing.” Crucially, the additional costs incurred by compliance with Fairtrade standards are primarily borne by the consumer. Therefore, though aimed at improving fairness, these conditions ultimately continue to benefit powerful commercial interests and help maintain

²³ “How Fairtrade Differs from Other Labels,” Fair Trade International, accessed October 28, 2022, <https://info.fairtrade.net/what/how-fairtrade-differs-from-other-labels>.

²⁴ “How Fairtrade Differs from Other Labels.”

²⁵ “How Fairtrade Differs from Other Labels.”

²⁶ “How Fairtrade Differs from Other Labels.”

²⁷ “How Fairtrade Differs from Other Labels.”

²⁸ Juan Ignacio Staricco, “Class Dynamics and Ideological Construction in the Struggle for Fairness: A Neo-Gramscian Examination of the Fair Trade Initiative,” *The Journal of Peasant Studies* 46, no. 1 (2019): 105, <https://doi.org/10.1080/03066150.2017.1337003>.

their dominant position.²⁹ Through this lens, Fairtrade aligns itself with neoliberalism and does not disrupt the broader system of inequality. Moreover, its voluntary nature means that corporate participation is not mandatory, casting doubt on its ability to create lasting, systemic change. As Juan Staricco writes, the institutionalisation of a relationship between opposing interests inherently limits Fairtrade's transformative potential insofar as measures for better outcomes rely on the willingness of dominant powers to implement such processes.³⁰ As a result, despite achieving notable improvements for small farmers in developing economies, the accomplishments of Fairtrade merely divert attention from the core issue: that neoliberal capitalism is structurally dependent on inequality and exploitation to generate profit. Fairtrade ultimately fails to confront this reality as it does not challenge the status quo.³¹

Other aspects of Fairtrade that might be expected to counteract the dynamics typical of capitalist consumption also fall short of fully achieving their aims. In traditional markets, consumer attention is directed toward the symbolic appeal of the final product – commodities are fetishised. This focus obscures the social and environmental conditions of production, allowing exploitation to persist out of view.³² Fairtrade was created to confront this problem directly. By correcting market imbalances, it exposed the unfair practices embedded into how goods are produced and globally traded. In this sense, Fairtrade products were, at least initially, distinct in that they were not fetishised; they attempted to reinsert visibility and ethics into the act of consumption. However, this pivotal distinction has gradually eroded. As the Fairtrade brand has grown, it has increasingly become a symbol of morality in itself.³³ Advertising for Fairtrade products often frames the narrative through stark visual contrasts between privilege and poverty, using semiotic cues grounded in race, gender and class.³⁴ The resulting message positions the consumer as a morally responsible actor, encouraging purchases not as political acts of resistance to capitalism but as symbolic gestures of virtue. In this way, the act of buying Fairtrade becomes less about systemic change and more about

²⁹ Staricco, 105.

³⁰ Staricco, 106.

³¹ Jenni Ramone, "Tastes of Paradise: The 'Fair' Trade Myth," in *Barthes' Mythologies Today: Readings of Contemporary Culture*, eds. Pete Bennett and Julian McDougall (London: Routledge, 2013), 25, <https://ebookcentral-proquest-com.ezproxy.library.sydney.edu.au/lib/usyd/detail.action?pq-origsite=primo&docID=1386429>.

³² Ian Hudson and Mark Hudson, "Removing the Veil? Commodity Fetishism, Fair Trade and the Environment," *Organization & Environment* 16, no. 4 (December 2003): 413–414, <http://www.jstor.org/stable/26162054>.

³³ Catherine S. Dolan, "Branding Morality: The Case of Fairtrade," in *The Politics of Fair Trade: A Survey*, ed. Meera Warrior (London: Routledge, 2011), 37, <https://doi.org/10.4324/9780203831106>.

³⁴ Dolan, 44.

constructing an identity of ethical consumerism. Fairtrade shoppers are led to believe their choices are rectifying corporate wrongs, even as the underlying system remains unchallenged.³⁵ Morality, in this context, becomes a fetishised brand.³⁶

Traditional market dynamics of consumerism are further reinforced when Fairtrade marketing strategies commodify nature and transform it into an ideological construct. Rather than offering transparent accounts of its achievement, such as fostering relatively cleaner agricultural practices, Fairtrade often relies on rhetorical tropes of purity and naturalness. These narratives create romanticised and misleading conceptions of nature and the production of organic goods. The perception that developing countries are largely unindustrialised contributes to these distortions, as it implies a lack of chemical contamination in the land, air and water. As a result, Fairtrade products are perceived by consumers as inherently superior in quality and taste – nurtured by better soil, clean air, pure water and abundant sunshine.³⁷ According to Catherine Dolan, images of lush green tea fields and sunny coffee farms give consumers the impression that workers are happy and well-treated and the environment is healthy and unspoiled.³⁸ These curated depictions create a feel-good narrative that obscures the environmental degradation often linked to capitalist production.³⁹ With this imagery, Fairtrade participates in the very neoliberal structural practices it seeks to challenge, as it not only renders nature a visual commodity but also an ideology – a belief system of something that is pure and untouched rather than a living, complex reality.

Although many certification programs employ similar advertising strategies, there is a compelling argument that the idyllic narratives of thriving natural environments embedded in such imagery may not always be accurate. A notable example is how Cadbury shifted its branding strategy in May 2017 by replacing the Fairtrade logo on some of its chocolate packaging with its own Cocoa Life logo, to promote the company’s commitment to environmentally sustainable cocoa production.⁴⁰ The Fairtrade Foundation publicly endorsed the move, calling the Cocoa Life program – launched in 2012 by Cadbury and its parent company, Mondelez – a positive step, as it suggested these corporations were assuming direct

³⁵ Dolan, 39.

³⁶ Dolan, 37.

³⁷ Dolan, 46.

³⁸ Dolan, 45.

³⁹ Dolan, 45.

⁴⁰ “Why I Want to Cheer, Not Jeer, What is Happening with Cadbury and Fairtrade,” Fairtrade Foundation, accessed October 30, 2022, <https://www.fairtrade.org.uk/media-centre/blog/why-i-want-to-cheer-not-jeer-what-is-happening-with-cadbury-and-fairtrade/>.

responsibility for the sustainable sourcing of cocoa.⁴¹ However, in September 2017, the non-profit environmental group Mighty Earth published a critical report.⁴² According to their investigation, some of the world’s largest cocoa traders, including Olam International – a major supplier to Mondelez – were allegedly linked to purchases of cocoa sourced from protected areas in Côte d'Ivoire. The report does not comment on intent, so it is possible that any such purchases occurred unknowingly. The report found that nearly 90% of twenty-three forest reserves in the country had been destroyed, now replaced by cocoa plantations. Less than 11% of the original forest cover remains intact.⁴³

Illegal sourcing causes immense environmental damage, primarily through uncontrolled deforestation. Not only does the destruction of forests accelerate climate change because they absorb CO₂, but it also obliterates wildlife habitats. In Côte d'Ivoire, deforestation has led to the death of hundreds of thousands of native elephants. Today, only an estimated 200 to 400 remain.⁴⁴ These surviving elephants have been pushed into small, fragmented pockets of forest, making them more vulnerable to poaching and habitat loss.⁴⁵ Loss of biodiversity weakens ecosystems, reducing the resilience of nature and its capacity to adapt to climate change. In neighbouring Ghana, between 2001 and 2014, more than 117,700 hectares of protected forest land and 1,750 square kilometres of forest were cleared for cocoa cultivation.⁴⁶ In 2017, Olam International – alongside other major cocoa traders – joined the Cocoa and Forest Initiative, a collective agreement between cocoa suppliers, chocolate companies and the governments of Côte d'Ivoire and Ghana, aimed at reducing deforestation.⁴⁷ Nevertheless, according to a follow-up report published by Mighty Earth in 2022, deforestation linked to cocoa plantations in West Africa remains largely unchecked.⁴⁸ Despite Côte d'Ivoire and Ghana ranking among the global leaders in forest loss in 2018, cocoa production, which is a primary driver of this destruction, shows no sign of slowing

⁴¹ “Why I Want to Cheer, Not Jeer.”

⁴² Etelle Higonnet, Marisa Bellantonio and Glenn Hurowitz, *Chocolate’s Dark Secret: How the Cocoa Industry Destroys National Parks* (Washington: Mighty Earth, 2017), 3, accessed May 9, 2023, https://www.mightyearth.org/wp-content/uploads/2017/09/chocolates_dark_secret_english_web.pdf.

⁴³ Higonnet, Bellantonio and Hurowitz, 7–8.

⁴⁴ Higonnet, Bellantonio and Hurowitz, 4.

⁴⁵ Higonnet, Bellantonio and Hurowitz, 3.

⁴⁶ Higonnet, Bellantonio and Hurowitz, 3.

⁴⁷ “Our Progress Towards Tackling Deforestation in Cocoa,” Olam Group, accessed October 30, 2022, <https://www.olamgroup.com/news/all-news/blog/our-progress-towards-tackling-deforestation-in-cocoa.html>.

⁴⁸ “Sweet Nothings: How the Chocolate Industry Has Failed to Honor Promises to End Deforestation for Cocoa in Cote d’Ivoire and Ghana,” Mighty Earth, accessed October 30, 2022, https://www.mightyearth.org/wp-content/uploads/MightyEarthSweetNothingsReportFINAL_UpdatedFeb142022.pdf

down.⁴⁹ Meanwhile, major chocolate brands continue to display sustainability claims and certification logos on their packaging, projecting a perception of environmental responsibility that may not entirely align with actual conditions.

The environmental consequences of chocolate production extend way beyond deforestation. After harvesting, cocoa beans are transported to industrialised countries for processing. The transformation of cocoa beans into cocoa mass is energy-intensive, thus producing emissions and contributing to industrial pollution. Further energy inputs are required for producing sugar and manufacturing the aluminium foil used in chocolate packaging, including its printing and finishing. An analysis of the carbon footprint of chocolate made from Peruvian cocoa revealed that the making of a 100-gram bar generated approximately 220 grams of CO₂ emissions, including both direct and equivalent sources.⁵⁰ Yet the endorsement of cocoa by certification bodies – whether Fairtrade or others – constructs a persuasive ethical and ecological narrative that often overshadows these material realities. Such ideological framing serves to obscure the full environmental costs of chocolate production.

Clearly, despite efforts to promote social and environmental justice, Fairtrade-certified products remain ecologically problematic. Moreover, Fairtrade is consumption-driven. As such, despite its call to “buy fair” or “consume ethically”, it perpetuates the very mechanism that underpins the climate crisis: the imperative to consume.⁵¹ In this way, the narrative of environmental sustainability that surrounds Fairtrade certification offers consumers a false sense of security that conceals the systemic issues embedded in global production and consumption.

Solar Panels

Solar technology is globally hailed as a key solution to global warming by replacing the use of fossil fuels. However, the growing popularity of solar panels has not been matched by an adequate focus on their environmentally safe recovery, reuse or disposal at the end of their

⁴⁹ Mighty Earth and Stand.Earth, *U.S. Cocoa Imports: Secretive Mega-Traders Get the Lion's Share* (Washington: Mighty Earth, 2021), 5, accessed October 30, 2022, https://www.mightyearth.org/wp-content/uploads/US_Cocoa_Supply_Chain_Research.pdf.

⁵⁰ Marisa Camargo and Isilda Nhantumbo, *Towards Sustainable Chocolate: Greening the Cocoa Supply Chain* (London: International Institute for Environment and Development, 2016), 36, <https://www.iied.org/16613iied>.

⁵¹ Serge Latouche, “Sustainable Consumption in a ‘De-Growth’ Perspective,” in *Sustainable Consumption, Ecology and Fair Trade*, ed. Edwin Zaccaï (London: Routledge, 2007), 181–182, <https://www-taylorfrancis-com.ezproxy.library.sydney.edu.au/books/edit/10.4324/9780203965993/sustainable-consumption-ecology-fair-trade-edwin-zacca%C3%AF>.

life cycle, typically around twenty-five years. The global lack of recycling infrastructure and regulation for obsolete solar panels highlights a critical oversight.⁵² Without the ability to safely recycle solar panel components, the toxic waste generated from their disposal potentially constitutes another significant, and imminent, environmental emergency.⁵³ Moreover, the production of solar panels is itself problematic because it involves the use of hazardous chemical substances that pose risks to both human health and the environment. While solar *energy* as a resource is clean, the production and end-of-life management of solar panels reveal parts of the value chain that are far from ecologically sustainable.

The value chain of solar panels comprises five main stages: the extraction of raw materials, the purification and refinement of those materials, the manufacturing of panels, their operational use and the disposal of the panels when they become obsolete.⁵⁴ With the exception of the energy use phase – where solar energy itself is clean – each stage of this value chain generates greenhouse gas emissions and other environmental consequences. A closer look at how solar technology is produced demonstrates how and where these emissions occur. The main components of a solar energy system are the solar panel (or photovoltaic module), the controller and the battery.⁵⁵ The battery stores energy for later use, and the controller regulates incoming voltage from the panel and prevents the battery from overcharging. Each solar panel is composed of multiple photovoltaic (PV) cells, typically between 36 and 144.⁵⁶ These cells are thin wafers of silicon encased between two layers of plastic. The most common type, known as crystalline silicon (c-Si) cells, dominates the solar energy market due to its relatively high energy conversion efficiency.⁵⁷ Silicon (Si) is the key semiconductive material that converts sunlight into electricity, and it is derived from silica (SiO₂), which is abundant in sand. However, while silicon is plentiful, it is found in a highly impure form and must undergo a series of energy intensive and chemically intensive purification processes before it can be used. These procedures are environmentally damaging,

⁵² Yan Xu et al., “Global Status of Recycling Waste Solar Panels: A Review,” *Waste Management* 75 (2018): 450–458, <https://doi.org/10.1016/j.wasman.2018.01.036>.

⁵³ Chan Wang et al., “Looming Challenge of Photovoltaic Waste Under China’s Solar Ambition: A Spatial-Temporal Assessment,” *Applied Energy* 307 (2022): 118186, <https://doi.org/10.1016/j.apenergy.2021.118186>.

⁵⁴ Jeremy Moss, Alicia Coram and Grant Blashki, *Solar Energy in Australia: Health and Environmental Costs and Benefits* (Canberra: The Australia Institute, 2014), 13, <https://australiainstitute.org.au/report/solar-energy-in-australia-health-and-environmental-costs-and-benefits/>.

⁵⁵ Xu et al., “Global Status of Recycling Waste Solar Panels,” 451.

⁵⁶ “60 vs. 72-Cell Solar Panels: Which Size Is Right For You?,” Energy Sage, accessed November 6, 2022, <https://news.energysage.com/60-vs-72-cell-solar-panels-which-is-right/>.

⁵⁷ Xu et al., “Global Status of Recycling Waste Solar Panels,” 451.

as they result in significant emissions and industrial waste.⁵⁸ Therefore, while solar energy itself is renewable and clean, much of the production process for solar panels is not ecologically sustainable.

The extraction of silica and the production of PV cells require a series of processes that rely on the use of hazardous substances, posing serious risks to both human and environmental health.⁵⁹ In the initial stage, silica is exposed to extremely high temperatures to remove oxygen. This process results in metallurgical-grade silicon with 99.5% purity.⁶⁰ The next stage is chemical refinement, during which the silicon is reacted with hydrogen chloride gas, producing trichlorosilane, a highly toxic compound.⁶¹ After distillation to remove residual impurities, trichlorosilane is treated with hydrogen to form silane, an extremely explosive gas. When heated, silane transforms into molten silicon, from which the silicon crystals used in solar cells are formed.⁶² The production process also generates silicon tetrachloride as a waste by-product. This toxic substance releases hydrochloric acid upon contact with air.⁶³

These chemical processes are highly energy intensive, contributing significantly to CO₂ emissions. The generation of the required heat throughout the various stages uses vast amounts of energy. Furthermore, when large blocks of silicon are cut into thin slices, they produce a fine dust called kerf, which can contaminate air and water.⁶⁴ The final wafers are cleaned using nitric acid, and the reactors used during production are cleaned with nitrogen trifluoride (NF₃).⁶⁵ This is a greenhouse gas with a global warming potential 17,200 times greater than that of carbon dioxide over 100 years.⁶⁶ NF₃ is now considered to significantly contribute to climate change. Despite its clean energy output, the production of solar panels

⁵⁸ Stephen Maldonado, "The Importance of New 'Sand-to-Silicon' Processes for the Rapid Future Increase of Photovoltaics," *ACS Energy Letters* 5, no. 11 (2020): 3628–3632, <https://dx.doi.org/10.1021/acseenergylett.0c02100>.

⁵⁹ Moss, Coram and Blashki, *Solar Energy in Australia*, 14.

⁶⁰ Swapnil Dubey, Nilesh Y. Jadhav and Betka Zakirova, "Socio-Economic and Environmental Impacts of Silicon Based Photovoltaic (PV) Technologies," *Energy Procedia* 33 (2013): 322–334, <https://doi.org/10.1016/j.egypro.2013.05.073>.

⁶¹ Dubey, Jadhav and Zakirova, 324.

⁶² "Learn Which Chemicals Make Solar Power Possible," Chem Service, accessed November 13, 2022, <https://www.chemservice.com/news/learn-which-chemicals-make-solar-power-possible/#:~:text=The%20silicon%20is%20mixed%20with,micro%20chips%2C%20Solar%20Industry%20explains>.

⁶³ Moss, Coram and Blashki, *Solar Energy in Australia*, 14.

⁶⁴ Moss, Coram and Blashki, 16.

⁶⁵ Moss, Coram and Blashki, 18.

⁶⁶ Stephen Russell, "Nitrogen Fluoride Now Required in GHG Protocol Greenhouse Gas Emissions Inventory," World Resources Institute, published May 22, 2013, accessed May 15, 2023, <https://www.wri.org/insights/nitrogen-trifluoride-now-required-ghg-protocol-greenhouse-gas-emissions-inventories>.

involves substantial pollution and contributes meaningfully to environmental degradation and climate change.

The recycling or disposal of solar panels are also challenging because, like other electronic devices, they contain hazardous materials that pose serious risks to human and environmental health. Among these are heavy metals such as lead, which damages the nervous system, and fire retardants such as polybrominated diphenyl ethers and tetrabromobisphenol A, both of which are known endocrine disruptors.⁶⁷ These toxic substances often end up in landfills through improperly discarded electronic waste (e-waste). They leach into the soil and contaminate ecosystems. Through food consumption, these substances can also accumulate in the human body and lead to long-term health problems. Therefore, the improper disposal of obsolete solar panels is dangerous to nature and humans.

Currently, there is a global lack of infrastructure for the safe and effective recycling of decommissioned solar panels. The European Union stands out as the only significant regulatory body to mandate the proper disposal and recycling of all electrical and electronic equipment under the Waste from Electrical and Electronic Equipment Directive. In contrast, many countries lack stringent regulatory frameworks to monitor and enforce the appropriate handling of end-of-life solar panels, increasing the likelihood of panels being dumped in landfills.⁶⁸ The Product Stewardship Institute has warned that the volume of obsolete solar panels will grow annually. By 2050, it is projected that global solar panel waste will reach approximately 86 million tonnes – a volume that is difficult to comprehend fully.⁶⁹ If left unaddressed, this waste stream will significantly compound the already critical problem of global e-waste, which in 2019 reached 53.6 million tonnes. Alarming, only 17.4% of that amount was formally documented as properly recycled.⁷⁰ In 2020 alone, unrecycled e-waste was responsible for an estimated 580 million tonnes of CO₂-equivalent emissions.⁷¹ Clearly, while solar energy is renewable, the environmental cost of the production and disposal of the

⁶⁷ Moss, Coram and Blashki, *Solar Energy in Australia*, 16–19.

⁶⁸ “Waste from Electrical and Electronic Equipment (WEEE),” European Commission, accessed November 8, 2022, https://environment.ec.europa.eu/topics/waste-and-recycling/waste-electrical-and-electronic-equipment-veee_en.

⁶⁹ “Recyclable Solar Materials Could Be Worth \$15 Billion,” Product Stewardship Institute, accessed October 1, 2023, <https://www.productstewardship.us/page/Solar-Panels>.

⁷⁰ Vanessa Forti, Cornelis Peter Baldé, Ruediger Kuehr, Garam Bel, *The Global E-Waste Monitor – Quantities, Flows and the Circular Economy Potential* (Bonn: Sustainable Cycles [SCYCLE] Programme, 2020), 9, accessed April 18, 2023, <https://ewastemonitor.info/gem-2020/>.

⁷¹ Narendra Singh and Oladele A. Ogunseitan, “Disentangling the Worldwide Web of E-Waste and Climate Change Co-Benefits,” *Circular Economy* 1, no. 2 (2022): 100011, <https://doi.org/10.1016/j.ccc.2022.100011>.

necessary technology highlights the urgent need for more sustainable practices and regulatory reform across the entire value chain.

E-waste, including decommissioned solar panels, is projected to reach an annual production of 110 million tonnes worldwide in 2050, posing a significant environmental challenge.⁷² Currently, substantial amounts of e-waste are exported to developing countries under the premise that these items are only slightly imperfect and thus contain components and materials that are recoverable and reusable. However, it is difficult to verify the actual content of these shipments, making it unclear how much e-waste is genuinely repairable versus how much is exported under the guise of reuse but ultimately ends up buried in landfills.⁷³ According to the United Nations Institute for Training and Research, of the 53.6 million tonnes of e-waste generated globally in 2019, 5.1 million tonnes were exported.⁷⁴ Alarming, 3.3 million tonnes of these exports occurred in an uncontrolled manner.⁷⁵ It remains unknown how much of this uncontrolled hazardous e-waste has been dumped into landfills.

Much of this e-waste originated in industrialised nations, but was transported to developing regions, such as Africa and Southeast Asia, where infrastructure for safe disposal is inadequate, and regulatory frameworks to ensure worker safety and environmental protection are weak or absent.⁷⁶ The toxic leachate from illegally exported e-waste contaminates soils and waterways, contributing significantly to environmental degradation and climate change. At the same time, the global demand for clean energy is poised to increase, driven by population growth and the rising number of people entering the middle class in emerging economies. This will inevitably drive higher manufacturing activity, further exacerbating environmental pressures. In summary, unless structural changes are made, the challenge of reversing global warming is likely to persist, and the concept of environmental sustainability risks becoming nothing more than a myth.

The examples discussed in this chapter clearly establish the complexities behind so-called sustainable solutions, revealing the cultural narratives and misperceptions that sustain both consumer culture and the illusion of progress on environmental issues. There is no doubt

⁷² Cornelis Peter Baldé et al., *Global Trans-Boundary E-Waste Flows Monitor 2022* (Bonn: United Nations Institute for Training and Research, 2022), 15, <https://ewastemonitor.info/gtf-2022/#:~:text=The%20Global%20Transboundary%20E%2Dwaste%20Flows%20Monitor%202022&text=Of%20the%205.1%20Mt%2C%201.8,threat%20to%20managing%20e%2Dwaste>.

⁷³ Baldé et al., 4.

⁷⁴ Baldé et al., 8.

⁷⁵ Baldé et al., 8.

⁷⁶ Baldé et al., 11.

that approaches such as solar panels and Fairtrade certification offer tangible benefits. Similar claims could be made for other measures, such as wind-generated electricity, electric or hybrid vehicles and other emerging technologies, which cannot be covered due to the limited scope of this project. Nevertheless, regardless of the solution, the core issue remains that the genuine benefits of these products can overshadow the complex environmental realities of their global production and disposal. At the same time, the narratives surrounding these solutions tend to shift responsibility for systemic change onto individual consumers, rather than addressing the structures that perpetuate inequality and ecological harm. The marketing rhetoric that accompanies many supposedly sustainable goods compounds all these problems. Language centred on ideals such as “natural,” “pure,” “green,” “clean,” “untouched,” “sustainable” and “ecofriendly” works to obscure the environmental consequences of production and reproduce a fantasy of ecological harmony. These narratives function ideologically: they conceal the polluting realities behind the product and offer a false sense of reassurance that precludes the possibility of a critical engagement with the structural causes of the climate crisis. Without considering how resources are extracted, how products are made, how markets operate, and the available infrastructure to ensure an efficient circular economy, such initiatives become mere symbolic gestures rather than catalysts for lasting systemic transformation.

This perspective ultimately demonstrates that economic, industrial and cultural systems create conditions that make environmental sustainability difficult to achieve. These systems shape priorities, practices, and norms – such as profit maximisation, production geared toward economic growth, and patterns of consumption – that perpetuate environmental problems. Environmental art operates within these same systems, and its production, distribution, and reception are also shaped by these priorities. Consequently, it faces the same constraints that hinder broader climate action. For this reason, environmental art’s potential to drive systemic change is limited: it must function within the very frameworks that generate and sustain the environmental problems it seeks to address.

3. THE ENVIRONMENTAL IMPACTS OF FAST FASHION

A thesis devoted to art and environmental sustainability compels a chapter on fashion. Fashion is typically aligned as art's 'other' – it is transient as opposed to universal, material as opposed to abstract – which, in this particular instance, makes it all the more pertinent. This is because the problems that are germane to art are brought far more to the fore with fashion. The principal difference, however, is the scale of production. Yet, it is this economy of scale that makes fashion essential for any discussion of the contradictions enshrined in environmental depredation. Art, to be sure, is not a contributor to the environmental crisis *per se*, although, as has been shown so far, it contributes to myriad skewed perceptions and misplaced debates about it that are usually guided by ideological self-interest as opposed to concerted, penetrating data and discourse. In a different but still analogous way, contemporary fashion has made an industry of sustainability such that “sustainable fashion,” which is more an oxymoron than a reality, has become a hypnotic mantra that is next to meaningless. It is this mantra that hides the grim reality. Such justifications aside, a short but still detailed gloss of the fashion industry provides a necessary and striking picture of the intricacies involved in mass production and their short- and long-term environmental effects. So complex are they, and now so entrenched in the commodity market, that immediate or small-scale solutions are pointless.

Conversations about the environmental crisis tend to gravitate around warmer oceans, fossil fuels, violent weather events and so on. Search blogs, podcasts, documentaries, op eds and related sources about the environmental crisis, and you will find that fashion is seldom at the forefront of debate. Yet fashion is the elephant in the room.¹ The fashion industry, specifically *fast fashion*, contributes about 10% of global greenhouse gas (GHG) emissions.² This percentage includes emissions from garments and footwear. The fast fashion model of cheap production and quick disposal contributes to climate change so significantly that a prompt review of practices within the industry is crucial to prevent global warming from exceeding 1.5°C, in line with the Paris Agreement.³

¹ Note the use of *fashion* here: it is now an accepted term that encompasses all design and production of clothing, accessories and shoes, and also the term for the high end of clothing and dress associated with the “fashion system” that grew out of the eighteenth century.

² “UN Helps Fashion Industry Switch to Low Carbon,” United Nations Climate Change, accessed March 8, 2023, <https://unfccc.int/news/un-helps-fashion-industry-shift-to-low-carbon>.

³ “UN Helps Fashion Industry Switch to Low Carbon.”

Despite rising awareness of the devastating environmental effects from the fashion industry, public discourse surrounding environmental sustainability remains focused on fossil fuels and critically underdiscusses the fashion industry. The many large-scale environmental consequences of the fashion industry – including the enormous water and pesticide footprint of cotton farming, greenhouse gas emissions from polyester production, microplastic pollution from washing synthetic fabrics, chemical contamination from dyeing, toxic leather manufacturing processes, and the environmental costs of post-consumption clothing waste – reveal the vast and multifaceted nature of its consequences. Note that the set of problems discussed in this chapter is limited because the fashion problem is far too vast for the scope of this project. There are existing studies that cover in great depth the overwhelming magnitude of environmental as well as social issues that stem directly and indirectly from the fashion industry.⁴ However, the selection analysed below provides a view broad enough to illustrate how fashion undermines any meaningful pursuit of sustainability as it perpetuates environmental degradation on a massive scale. It does so by promoting overproduction, short product lifespans, and high consumption of water, energy, and raw materials, while generating substantial waste and environmental contamination. This focus highlights the significant challenges that environmental art and activism face, as they must contend with industries like fast fashion that are inherently at odds with the goals of environmental preservation and responsible resource management.

Fast Fashion

The concept of fashion emerged in the eighteenth century, alongside industrialisation, the emergence of the individual subject, and the idea of social mobility. Historically, fashion was defined by high-quality tailoring, luxurious fabrics and original design. It symbolised exclusivity and was closely tied to social status. Advances in technology and production methods dramatically altered this perspective of fashion. The invention of synthetic textiles

⁴ “What She Makes,” Oxfam Australia, accessed April 5, 2023, <https://www.oxfam.org.au/what-she-makes/>. Another report by Oxfam Australia reveals the horrors in the fashion industry, including unliveable wage levels; wage theft through unpaid working hours; forced child labour; poor or dangerous working conditions; lack of medical care and adequate compensation for workers and family members after accidents or deaths in the workplace; unaddressed workplace misconduct such as sexual, physical and verbal abuse; absence of union representation to establish workers’ rights; and the absence of legal frameworks to ensure the reporting of workplace injustice. <https://www.oxfam.org.au/wp-content/uploads/2021/11/Made-in-Poverty-the-True-Price-of-Fashion-Oxfam-Australia.pdf>. The killing of animals exclusively for fur and specialty leathers is also an abhorrent aspect of fashion production.

enabled the creation of fabrics that were not only durable and versatile but also inexpensive.⁵ Meanwhile, the prices of natural fibres such as silk, cotton and wool also declined due to industrialisation, mass production and the effects of globalisation.⁶ These developments made fashion so economically accessible that in 2022, the global apparel market, encompassing clothing, shoes, jewellery and accessories, generated US\$1.53 trillion in revenue, a figure projected to rise to US\$2 trillion by 2027.⁷ A significant share of this income is driven by fast fashion, a business model that replicates catwalk styles and brings them to consumers quickly and affordably. Fast fashion now dominates global production and is responsible for substantial environmental harm.

The business model of fast fashion is predicated on high-volume sales at low retail prices, made possible by cheap manufacturing costs. To maintain these margins, key segments of the supply chain, such as textile manufacturing, leather tanning and garment production, are predominantly outsourced to developing countries. Production costs are lower in these regions not only because of inexpensive labour but also due to weak environmental regulations. Manufacturers can sidestep costly environmental safeguards, including treatment plants, and offer their services at highly competitive prices. This cost-cutting, however, exacts a significant environmental toll. Toxic effluents from textile and leather processing are routinely discharged into local waterways untreated. Despite widespread awareness of the environmental implications of such practices, many retail brands continue to wilfully look the other way.⁸ Such disavowal enables them to distance themselves from their suppliers' actions, evade accountability and ultimately weaken consumer agency, as responsibility becomes diffused or entirely obscured.

While environmentally compliant textile and dyeing facilities do exist in developing countries, the costs of compliance often deter use, as most retail brands prioritise profit margins above environmental responsibility.⁹ The Zero Liquid Discharge campaign launched by the Indian government in 2015 is a revealing case in point.¹⁰ In 2005, the Tamil Nadu

⁵ Nicolay Anguelov, *The Dirty Side of the Garment Industry: Fast Fashion and Its Negative Impact on Environment and Society* (Boca Raton, FL: CRC Press, 2006), ix, <https://www.taylorfrancis.com.ezproxy.library.sydney.edu.au/books/mono/10.1201/b18902/dirty-side-garment-industry-nikolay-anguelov>.

⁶ Anguelov, ix.

⁷ "Revenue of the Apparel Market Worldwide from 2014 to 2027," Statista, accessed March 29, 2023, <https://www.statista.com/forecasts/821415/value-of-the-global-apparel-market>.

⁸ "Revenue of the Apparel Market."

⁹ "Revenue of the Apparel Market."

¹⁰ Jenny Grönwall and Anna C. Jonnson, "The Impact of 'Zero' Coming into Fashion: Zero Liquid Discharge Uptake and Socio-Technical Transitions in Tirupur," *Water Alternatives* 10, no. 2 (2017): 602–624, <https://www.water-alternatives.org/index.php/alldoc/articles/vol10/v10issue2/372-a10-2-22/file>.

Pollution Control Board reported that a cluster of knitted garment manufacturers in Tirupur was discharging an average of 88 million litres of untreated toxic effluent daily into the Noyyal River.¹¹ As these factories were responsible for 80% of India's textile exports, their contribution to the local economy was significant.¹² However, the environmental damage they were causing was equally vast, as the Noyyal had become so chemically contaminated that it had effectively turned into salt water.¹³ In 2011, following sustained pressure from community organisations and local farmers whose crops were affected by the degradation of water quality, the Madras High Court ordered the closure of 720 facilities until they could demonstrate effective wastewater treatment.¹⁴ By 2016, many of those dyehouses in Tirupur reopened, totally transformed into state-of-the-art, zero-discharge facilities.¹⁵ This transition required substantial financial investment, which in turn increased manufacturing costs. As a result, many of their clients – predominantly retail brands – shifted their sourcing to countries like Bangladesh, where production costs remain lower due to weaker environmental oversight and less stringent enforcement of standards.¹⁶ These developments suggest that the industry's prioritisation of profit outweighs any commitment to environmental sustainability.

Polyester

Polyester is the most widely used textile, accounting for around 60% of total production.¹⁷ As a plastic-based fibre made from petrochemicals, its environmental footprint begins with the extraction of crude oil, a non-renewable resource. Before polyester can be manufactured, crude oil must be refined through a process that releases a range of hazardous pollutants, including benzene, toluene, ethylbenzene and xylene.¹⁸ These chemicals are known to cause

¹¹ Rachel Alexander, "Governance in Global Production Networks and Local Sustainability Challenges: Experiences of Sustainability Transitions in Cotton Garment Production in India," in *Upgrading the Global Garment Industry*, ed. Mohammad B. Rana and Matthew M.C. Allen (Cheltenham: Edward Elgar, 2021), 348, <https://www-elgaronline-com.ezproxy.library.sydney.edu.au/display/edcoll/9781789907643/9781789907643.xml>.

¹² Alexander, 348.

¹³ Phil Patterson, "The Impact of Environmental Regulation on Future Textile Products and Processes," in *The Global Textile and Clothing Industry*, ed. R. Shishoo (Oxford: Woodhead Publishing, 2012), 25, <https://doi.org/10.1533/9780857095626>.

¹⁴ Alexander, "Governance in Global Production Networks," 349.

¹⁵ Patterson, "The Impact of Environmental Regulation on Future Textile Products and Processes," 35.

¹⁶ Maiko Sakamoto et al., "Water Pollution and the Textile Industry in Bangladesh: Flawed Corporate Practices or Restrictive Opportunities?," *Sustainability* 11, no. 7 (2019): 1952, <https://doi.org/10.3390/su11071951>.

¹⁷ C. A. Moran, E. Eichelmann and C. J. Buggy, "The Challenge of 'Depeche Mode' in the Fashion Industry – Does the Industry Have the Capacity to Become Sustainable Through Circular Economic Principles, A Scoping Review," *Sustainable Environment* 7, no. 1 (2021): 7, <https://doi.org/10.1080/27658511.2021.1975916>.

¹⁸ Cristina Palacios-Mateo, Yvonne van der Meer, and Gunnar Seide, "Analysis of the Polyester Clothing Value Chain to Identify Key Intervention Points for Sustainability," *Environmental Sciences Europe* 33, no. 2 (2021): 3, <https://doi.org/10.1186/s12302-020-00447-x>.

neurological and reproductive disorders, and many are classified as carcinogens.¹⁹ The refining process also emits substances such as nitrogen oxides and sulphur dioxide, which cause severe respiratory and cardiovascular conditions.²⁰ In addition, these compounds contribute to acid rain.²¹ To create polyester fibres, crude oil is refined into ethylene glycol and terephthalic acid, the main components of polyethylene terephthalate (PET).²² The PET is melted, extruded and spun into threads that are woven or knitted into fabric.²³ From resource extraction to final textile, the production of just one kilogram of polyester emits 27.2 kilograms of carbon dioxide equivalent (CO₂-eq), the standard metric used to measure emissions.²⁴ In 2015 alone, global polyester production for textiles released an estimated 706 billion kilograms of CO₂-eq into the atmosphere.²⁵

Polyester clothing contributes to climate change not only during its production but also during the use phase of its life cycle. Each time it is washed, it sheds microplastics, non-biodegradable tiny synthetic fibres that accumulate in land and waterways over time. Laundry effluent from synthetic garments is responsible for an estimated 35% of all microplastic pollution in the world's oceans.²⁶ These particles are frequently ingested by aquatic organisms that mistake them for food, leading to injury, death and the disruption of marine ecosystems, all of which have climate implications.²⁷ Marine organisms, including fish and plants, play a crucial role in removing carbon dioxide (CO₂) from the atmosphere through a process known as carbon sequestration.²⁸ Ocean plants absorb CO₂ at the surface; when consumed by fish, the carbon is processed and excreted in faeces that sink to the seabed, effectively locking away CO₂.²⁹ As microplastic pollution threatens biodiversity in these systems, it undermines carbon removal and contributes to global warming. In addition to polluting water, polyester garments also release microplastics in the air during tumble drying.

¹⁹ "Air Pollutants," Earthworks, accessed March 18, 2023, <https://earthworks.org/issues/air-pollutants/>.

²⁰ Palacios-Mateo, van der Meer and Seide, "Analysis of the Polyester Clothing Value Chain," 3.

²¹ "Air Pollutants."

²² Palacios-Mateo, van der Meer and Seide, "Analysis of the Polyester Clothing Value Chain," 2.

²³ Palacios-Mateo, van der Meer and Seide.

²⁴ Palacios-Mateo, van der Meer and Seide.

²⁵ Palacios-Mateo, van der Meer and Seide.

²⁶ Ana Šaravanja, Tanja Pušić, and Tihana Dekanić, "Microplastics in Wastewater by Washing Polyester Fabrics," *Materials* 15, no. 7 (2022): 2683, <https://doi.org/10.3390/ma15072683>.

²⁷ Šaravanja, Pušić and Dekanić, 2683.

²⁸ "How Does Overfishing Make Climate Change Worse?," Greenpeace, last modified August 6, 2020, <https://www.greenpeace.org/aotearoa/story/how-does-overfishing-make-climate-change-worse/>.

²⁹ "Fish Poop Helps Remove 1.65 Billion Tons of Carbon from the Atmosphere," University of Southampton, last modified February 19, 2021, <https://www.southampton.ac.uk/news/2021/02/fish-carbon-flux.page#:~:text=%E2%80%9CMarine%20fishes%20can%20capture%20carbon,deep%20ocean%20as%20they%20excrete.>

When the airborne fibres are inhaled by humans and animals, they do not easily break down in physiological fluids. Some have been found to persist in lung tissue for up to 180 days, causing health damage in the meantime.³⁰ Clearly, polyester garments pose a significant challenge not only to environmental health but also to public health throughout their life cycle, revealing the hidden costs of cheap, disposable clothing.

Cotton

Natural fabrics are commonly regarded as healthier to use and more environmentally friendly than synthetics due to their breathability, durability and biodegradability. Cotton, in particular, remains the most popular. Lightweight, comfortable, absorbent, inexpensive and widely available, cotton is favoured by consumers not only for its qualities but also for its perceived sustainability as it is a plant, so it does not require petroleum-based input. This perception, however, obscures the fact that cotton is one of the five most environmentally unsustainable crops in terms of water use.³¹ Growing one kilogram of raw cotton requires, on average, 10,000 litres of water.³² Of the estimated 44 trillion litres of irrigation water used yearly by the global textile industry, approximately 95% is dedicated to cotton cultivation.³³

Half of the world's cotton supply is grown in India and China – two countries that, combined, use an astonishing 22 trillion litres of water for cotton irrigation alone, despite the fact that both nations face acute water scarcity.³⁴ When rainfall is inadequate, farmers rely on the extraction of groundwater, which depletes aquifers and compromises the availability of clean drinking water for local populations. Groundwater extraction by private cotton enterprises has been so extreme that, in some regions, the water table has dropped by as much as four metres.³⁵ These underground reserves play a crucial role in maintaining ecological balance. Their natural discharge into rivers and wetlands supports biodiversity in these ecosystems. When water tables decline, species that depend on these habitats for survival,

³⁰ Johnny Gasperi et al., "Microplastics in Air: Are We Breathing it In?," *Current Opinion in Environmental Science and Health* 1 (2018): 3, <https://doi.org/10.1016/j.coesh.2017.10.002>.

³¹ Mesfin M. Mekonnen and Arjen Y. Hoekstra, "Sustainability of the Blue Water Footprint of Crops," *Advances in Water Resources* 143 (2020): 103679, <https://doi.org/10.1016/j.advwatres.2020.103679>.

³² Nia Cherrett et al., *Ecological Footprint and Water Analysis of Cotton, Hemp and Polyester* (Stockholm: Stockholm Environment Institute, 2005), 9, <https://mediamanager.sei.org/documents/Publications/SEI-Report-EcologicalFootprintAndWaterAnalysisOfCottonHempAndPolyester-2005.pdf>.

³³ Kirsi Niinimäki et al., "The Environmental Price of Fast Fashion," *Nature Reviews Earth and Environment* 1, no. 4 (April 2020): 191, <https://doi.org/10.1038/s43017-020-0039-9>.

³⁴ P. Senthil Kumar et al., "Industrial Water Footprint: Case Study on Textile Industries," in *Water Footprint Assessment and Case Studies*, ed. Subramanian Senthilkannan Muthu (Singapore: Springer, 2021), 48, <https://doi.org/10.1007/978-981-33-4377-1>.

³⁵ Kumar et al., 7.

especially decomposers that break down organic matter, die off.³⁶ Their disappearance disrupts the natural cycle of minerals and nutrients in soil and water, undermining plant growth and the regenerative capacity of the ecosystem. This breakdown has direct implications for climate change because reduced plant growth means that less atmospheric CO₂ is absorbed through photosynthesis.³⁷ The CO₂ that remains in the air traps heat and causes global warming. Overextraction of groundwater also increases soil salinity, as saline reserves deep underground move towards the surface and mix with freshwater used to irrigate crops.³⁸ As few plants can grow in saline soil, CO₂ absorption is diminished.³⁹ Despite the widespread assumption that cotton is sustainable because it is a plant, its production for the fashion industry causes significant environmental impacts.

Pesticides

Cotton farming requires an extensive use of pesticides, which is enormously destructive to the environment.⁴⁰ Pesticides are a large group of highly toxic chemicals that include herbicide, insecticide, fungicide and other compounds that target rodents, molluscs, fish and nematodes. Although they are designed to eliminate threats to crops, pesticides destabilise ecosystems by also killing non-target species such as earthworms, crickets, spiders and other organisms essential to healthy soil and food chains.⁴¹ In a chain reaction, wildlife that feed on these organisms suffer secondary poisoning or face food scarcity, leading to broader ecological imbalances. Pollinators such as bees, butterflies and birds are especially vulnerable because they feed on plants and insects affected by pesticides. As the disruption to plant pollination further reduces pollinator populations, it creates a feedback loop of ecological destruction.⁴² These chain reactions are known as “trophic cascades,” ecological domino

³⁶ Emilio Custodio, “Aquifer Overexploitation: What Does it Mean?,” *Hydrogeology Journal* 10, no. 2 (April 2002): 255, <https://doi.org/10.1007/s10040-002-0188-6>.

³⁷ “Degraded Coastal Wetlands Contribute to Climate Change,” IUCN, last modified April 10, 2011, <https://www.iucn.org/content/degraded-coastal-wetlands-contribute-climate-change#:~:text=Drainage%20and%20degradation%20of%20coastal,a%20new%20report%20has%20found.>

³⁸ Custodio, “Aquifer Overexploitation,” 257–258.

³⁹ Pooja Shrivastava and Rajesh Kumar, “Soil Salinity: A Serious Environmental Issue and Plant Growth Promoting Bacteria as One of the Tools for its Alleviation,” *Saudi Journal of Biological Sciences* 22, no. 2 (2015): 124, <https://doi.org/10.1016/j.sjbs.2014.12.001>.

⁴⁰ Cherrett et al., *Ecological Footprint*, 9.

⁴¹ Food and Agriculture Organization of the United Nations and International Cotton Advisory Committee, *Measuring Sustainability in Cotton Farming Systems* (Rome: FAO, 2015), 15, accessed March 28, 2023, https://icac.org/Content/PublicationsPdf%20Files/f840b34c_38de_4e2a_ab54_4ad66948d4b5/SEEP-report-english.pdf.pdf.

⁴² Francisco Sánchez-Bayo, “Indirect Effect of Pesticides on Insects and Other Arthropods,” *Toxics* 9, no. 8 (2021): 1, <https://doi.org/10.3390/toxics9080177>.

effects where the loss of one species affects the balance of others, depending on whether the affected organism was predator or prey.⁴³ For example, the death of dragonflies due to pesticide exposure can lead to a surge in tadpole populations, as dragonflies typically help keep their numbers in check. When too many tadpoles compete for limited food, they overconsume algae and aquatic plants – the organisms responsible for producing oxygen and forming the base of the aquatic food chain. As these plants are depleted and tadpoles begin to die off, the decomposition process releases excess nutrients into the water, disrupting the natural nutrient balance and lowering oxygen levels. These conditions trigger algal blooms, which block sunlight from penetrating the water, disrupt photosynthesis in aquatic plants and further deplete oxygen levels, killing fish and other aerobic marine organisms.⁴⁴

The cumulative effects of pesticide use – biodiversity loss, declining soil fertility and water pollution – make cotton cultivation one of the key sustainability concerns within the fashion industry.⁴⁵ Despite efforts to reduce pesticide use through organic farming, such methods require intercropping with other plants to deter pests, which lowers cotton yields and reduces economic profitability. As a result, conventional methods continue to dominate. While genetically modified cotton initially seemed promising, pests like the bollworm have developed resistance to the insecticidal proteins it produces, leading to even greater reliance on pesticides.⁴⁶ It is noteworthy that contamination of waterways and exposure to pesticides also causes great harm to humans. Many pesticides contain known neurotoxins and carcinogens, and exposure has been linked to infertility and liver and kidney damage. Highly toxic compounds such as endosulfan can cause coma or death, just by inhalation.⁴⁷ The widespread use of pesticides in cotton farming presents an environmental and public health concern that starkly contradicts the notion of cotton as an environmentally benign textile.

Textile Production

Beyond pesticide use and excessive water consumption for irrigation, the transformation of natural and synthetic fibres into textiles involves chemical-intensive wet processes that

⁴³ Sánchez-Bayo, 11.

⁴⁴ “The Effects: Environment,” United States Environmental Protection Agency, accessed March 28, 2023, <https://www.epa.gov/nutrientpollution/effects-environment#:~:text=Algal%20blooms%20can%20reduce%20the,recreation%2C%20businesses%20and%20property%20values>.

⁴⁵ Food and Agriculture Organization, *Measuring Sustainability*, 18.

⁴⁶ Pesticide Action Network UK, *Is Cotton Conquering Its Chemical Addiction?* (London: Pesticide Action Network UK, 2018), 19, accessed March 28, 2023, https://issuu.com/pan-uk/docs/cottons_chemical_addiction_-_update?e=28041656/62705601.

⁴⁷ Pesticide Action Network UK, 43.

require large volumes of water and generate vast quantities of toxic effluent.⁴⁸ On average, around 200,000 litres of water are required to produce one tonne of textile, making this stage one of the most environmentally demanding in the fashion value chain.⁴⁹ Moreover, the wet treatment phases – boiling, bleaching, dyeing and finishing – use approximately 2,000 different chemicals, including waxes, solvents, biocides, defoamers, lubricants, softeners, colourants and thinning agents.⁵⁰ These substances contain a range of pollutants, such as glycerine, zinc chloride, polyalcohols, diethylene glycol, hydrogen peroxide and sodium hypochlorite.⁵¹ As these chemicals are washed away during processing, they enter wastewater streams. Even when wastewater is treated, complete purification is rarely achieved. Of the 72 toxic substances commonly found in textile wastewater, only 42 can be effectively removed through standard treatment methods. The remaining 30 elements, including persistent heavy metals and dye residues, enter ecosystems untreated, contaminating soil and water, and contributing to ecological degradation and global warming.⁵²

Textile Dyeing

Azo dyes, the most widely used textile colourants, are particularly toxic. These dyes are chemically stable and resistant to degradation, making them difficult to remove through conventional treatment.⁵³ For every kilogram of fabric, around 60 grams of dye are used, and up to 20% washes off in wastewater, releasing as much as 12 grams of dye per kilogram of textile directly into the environment.⁵⁴ The low degradation measure of Azo dyes means that they accumulate in the environments where they are discharged and cause widespread trophic cascades. They kill essential organisms and disrupt food webs, as well as destroying

⁴⁸ N. M. Sivaram, P. M. Gopal, and Debabrata Barik, “Toxic Waste from Textile Industry,” in *Energy From Toxic Organic Waste for Heat and Power Generation*, ed. Debabrata Barik (Duxford: Woodhead Publishing, 2019), 44, <https://doi.org/10.1016/B978-0-08-102528-4.00004-3>.

⁴⁹ A. K. Roy Choudhury, “Environmental Impacts of the Textile Industry and its Assessment Through Life Cycle Assessment,” in *Roadmap to Sustainable Textiles and Clothing: Environmental and Social Aspects of Textiles and Clothing Supply Chain*, ed. Subramanian Senthilkannan Muthu (Singapore: Springer, 2014), 2, <https://doi.org/10.1007/978-981-287-110-7>.

⁵⁰ T. Karthik and D. Gopalakrishnan, “Environmental Analysis of Textile Value Chain: An Overview,” in *Roadmap to Sustainable Textiles and Clothing: Environmental and Social Aspects of Textiles and Clothing Supply Chain*, ed. Subramanian Senthilkannan Muthu (Singapore: Springer, 2014), 175, <https://doi.org/10.1007/978-981-287-110-7>.

⁵¹ Karthik and Gopalakrishnan, 175.

⁵² Anguelov, *The Dirty Side of the Garment Industry*, 80.

⁵³ Mohammed A. Hassaan and Ahmed El Nemr, “Health and Environmental Impact of Dyes: Mini Review,” *American Journal of Environmental Science and Engineering* 1, no. 3 (2017): 65, <https://www.sciencepublishinggroup.com/journal/paperinfo?journalid=529&doi=10.11648/j.ajese.20170103.11>.

⁵⁴ Veena Sreedharan and Kokati Venkata Bhaskara Rao, “Biodegradation of Textile Azo Dyes,” in *Nanoscience and Biotechnology for Environmental Applications*, ed. K.M. Gothandam et al. (Switzerland: Springer International, 2019), 118, https://doi.org/10.1007/978-3-319-97922-9_5.

microbial life in the land, which alters the soil's chemical composition and diminishes its ability to sequester carbon dioxide.⁵⁵ Although chemical degradation methods for Azo dyes exist, they often involve other toxic compounds, resulting in further environmental harm.⁵⁶ While microbial degradation is emerging as a promising solution, it remains at the experimental stage.⁵⁷ Until it becomes viable on an industrial scale, the widespread use and discharge of persistent poisons in textile production continue to undermine sustainability claims and contribute significantly to climate change and ecosystem collapse.

Regulatory Gaps

The World Trade Organization provides guidelines on permissible levels of toxic discharge from the garment industry, but they remain non-binding recommendations. It is ultimately up to individual nations to legislate their own environmental standards, with enforcement delegated to local authorities.⁵⁸ Such a fragmented system leads to widespread non-compliance, especially in countries where rapid industrial and economic growth are prioritised over environmental protection. A report by Greenpeace found that up to 70% of China's water systems are polluted, with 20% of this pollution traced to the textile industry.⁵⁹ The investigation revealed the presence of hazardous, hormone-disrupting chemicals in wastewater discharged into the Yangtze and Pearl River deltas from two textile manufacturing sites, despite one of the sites having an updated wastewater treatment plant.⁶⁰ Both facilities were found to have commercial ties with major global fashion brands, including Adidas, Converse, H&M and Calvin Klein, illustrating the role of international corporations in environmental degradation.⁶¹

Despite efforts by the Chinese government to tighten regulation, enforcement remains uneven and insufficient.⁶² Further studies conducted in 2017 and 2021 in an industrial region of Guangxi province identified similarly alarming results. Effluent from two local wastewater treatment plants contained high levels of endocrine-disrupting chemicals such as bisphenol A,

⁵⁵ Hassaan and El Nemr, "Health and Environmental Impact of Dyes."

⁵⁶ Sreedharan and Rao, "Biodegradation of Textile Azo Dyes," 118

⁵⁷ Sreedharan and Rao, 131.

⁵⁸ Anguelov, *The Dirty Side of the Garment Industry*, 80.

⁵⁹ Greenpeace International, *Dirty Laundry: Unravelling the Corporate Connections to Toxic Water Pollution in China* (Amsterdam: Greenpeace International, 2011), 6, accessed March 28, 2023, <https://www.greenpeace.org/international/publication/7168/dirty-laundry/>.

⁶⁰ Greenpeace International, 5.

⁶¹ Greenpeace International, 5.

⁶² Chermaine Lee, "Inside China's Plan to Clean Up Its Textile Industry," Fair Planet, May 28, 2022, <https://www.fairplanet.org/story/inside-chinas-plan-to-clean-up-its-textile-industry/>.

bisphenol S and 4-nonylphenol.⁶³ These substances are known to interfere with the endocrine systems of humans and wildlife, causing reproductive harm, behavioural disorders and skeletal abnormalities.⁶⁴ The analysis also detected four types of perfluorinated and polyfluorinated alkyl substances (PFAs) – a class of over 4,700 chemicals often referred to as “forever chemicals” due to their resistance to degradation.⁶⁵ According to the European Environment Agency, PFAs are linked to liver damage, thyroid dysfunction, fertility issues and cancer.⁶⁶ These findings highlight the global failure of voluntary compliance frameworks and the limitations of consigning environmental responsibility to weak regulatory systems. In a production model that prioritises low cost and fast production, environmental safeguards are treated as expendable, enabling major fashion brands to maintain ethical façades while relying on opaque and harmful practices deep within their supply chains.

In Bangladesh, the environmental impact of the textile industry is so severe that much of the country’s river system is in a state of critical contamination. Bangladesh is home to an extensive and intricate network of approximately 700 rivers and tributaries, which form the backbone of the nation’s agriculture.⁶⁷ As these waters are widely used for irrigation, toxic industrial discharge enters the food chain, ultimately affecting both human and animal health. Toxicity assessments of fish and water from the Turag River, which flows near one of the country’s largest industrial zones, revealed the presence of hazardous metals at levels significantly exceeding safety standards.⁶⁸ Crops irrigated with water from the same river were also found to be contaminated with toxic metals.⁶⁹ Similarly, sediment samples from the Buriganga River, which runs along the outskirts of Dhaka, contained dangerously high levels of cadmium, lead and chromium – substances known for their long-term environmental persistence and harmful health effects.⁷⁰

⁶³ Si-Si Liu et al., “Occurrence, Fate and Ecological Risks of 90 Typical Emerging Contaminants in Full-Scale Textile Wastewater Treatment Plants From a Large Industrial Park in Guangxi, Southwest China,” *Journal of Hazardous Materials* 449 (May 2023): 131048, <https://doi.org/10.1016/j.jhazmat.2023.131048>.

⁶⁴ Tiziana A.L. Brevini, Simona Bertola Zaneto, and Fabiana Cillo, “Effects of Endocrine Disruptors on Developmental and Reproductive Functions,” *Current Drug Targets – Immune, Endocrine and Metabolic Disorders* 5, no. 1 (2005): 1–10, <https://doi.org/10.2174/1568008053174750>.

⁶⁵ Liu et al., “Occurrence, Fate and Ecological Risks,” 131048.

⁶⁶ “What Are PFAs and How Are They Dangerous for My Health?,” European Environment Agency, accessed March 29, 2023, <https://www.eea.europa.eu/help/faq/what-are-pfas-and-how>.

⁶⁷ Md. Jamal Uddin and Yeon-Koo Jeong, “Urban River Pollution in Bangladesh During Last 40 Years: Potential Public Health and Ecological Risk, Present Policy and Future Prospects Toward Smart Water Management,” *Heliyon* 7 no. 2 (February 2021): 2, <https://doi.org/10.1016/j.heliyon.2021.e06107>.

⁶⁸ Uddin and Jeong, 9.

⁶⁹ Uddin and Jeong, 9.

⁷⁰ Uddin and Jeong, 5.

Much of this pollution stems from Bangladesh's booming textile industry, which has become a key player in global fashion manufacturing. After China, Bangladesh is the second-largest exporter of clothing in the world, with the sector generating 82% of the country's total export revenue.⁷¹ In 2016 alone, textile production in Bangladesh generated an estimated 1.8 million tonnes of fabric, resulting in approximately 217 billion litres of contaminated wastewater.⁷² Despite the existence of laws that mandate effluent treatment plants in manufacturing facilities, large volumes of untreated or poorly treated wastewater continue to be discharged into nearby rivers, especially in major industrial regions such as Dhaka, Narayanganj and Gazipur.⁷³ This ongoing discharge reflects not only regulatory failure but also a systemic prioritisation of economic output over environmental protection, with devastating consequences for the country's ecosystems and public health.

The level of pollution found in Bangladesh's Buriganga River is overwhelming. An estimated 6 million litres of industrial effluent are discharged into this waterway on a daily basis, with textile production alone accounting for half of this pollution.⁷⁴ The resulting toxicity causes indescribable harm to local ecosystems. Wastewater ions such as sodium carbonate, sodium bicarbonate and sodium sulphate anhydrous have been shown to inhibit reproduction, slow growth and reduce the lifespan of freshwater species such as salmon, trout and char.⁷⁵ In addition, bleaching agents and alkaline chemicals including sodium chloride, sodium phosphate, sodium hydroxide and sodium metasilicate trigger destructive chain reactions as they drastically alter the pH levels of water.⁷⁶ The fall of pH values below 4.5 or their rise above 8.5 kills many aquatic organisms.⁷⁷ Their death increases the amount of decaying organic matter, which reduces light penetration, inhibits photosynthesis in aquatic plants, and lowers oxygen levels, threatening the survival of aerobic aquatic life.

These anaerobic conditions, combined with decomposing organic waste, promote the production of methane, a potent greenhouse gas that has a global warming potential 87 times

⁷¹ Laila Hossain, Sumit Kanti Sarker, and Mohidus Samad Khan, "Evaluation of Present and Future Wastewater Impacts of Textile Dyeing Industries in Bangladesh," *Environmental Development* 26 (June 2018): 23–33, <https://doi.org/10.1016/j.envdev.2018.03.005>.

⁷² Hossain, Sarker and Khan, 23.

⁷³ Hossain, Sarker and Khan, 24.

⁷⁴ Hossain, Sarker and Khan, 24.

⁷⁵ Hossain, Sarker and Khan, 31.

⁷⁶ Nosra Methneni et al., "Persistent Organic and Inorganic Pollutants in the Effluents from the Textile Dyeing Industry: Ecotoxicology Appraisal Via a Battery of Biotests," *Environmental Research* 196 (May 2021): 110956, <https://doi.org/10.1016/j.envres.2021.110956>.

⁷⁷ Hossain, Sarker and Khan, "Evaluation of Present and Future Wastewater," 31.

greater than that of carbon dioxide over a 20-year time span.⁷⁸ When methane accumulates and is released at the water's surface, it heats up the atmosphere. In the Balu River, toxic discharges from nearby textile factories have been linked to zero levels of dissolved oxygen. In 2009, Bangladesh's Department of Environment formally declared the river to be in a critical state. It is also crucial to note that many of Bangladesh's rivers – including the Buriganga and Balu – are tributaries of larger transboundary rivers such as the Ganges, Brahmaputra and Meghna. As these rivers cross national borders, weaknesses in national regulation can have consequences beyond a single country, amplifying the environmental impact of textile production at a regional scale.

Leather Manufacturing and Tanning

The manufacturing of leather goods, a key area of fashion production, is among the most environmentally damaging industrial processes. Most raw materials for leather are by-products of the meat industry, sourced from slaughterhouses.⁷⁹ The beamhouse stage involves cleaning and conditioning raw hides through a series of chemically intensive operations: soaking, liming, unhairing, splitting, reliming, deliming, bating, degreasing, bleaching, pickling and depickling. Each of these processes introduces a wide array of hazardous substances into the production chain.⁸⁰ Biocides are used to kill bacteria; degreasers remove fats; sodium sulphide and hydrated lime liquor strip the outer skin and hair; ammonium chloride softens the hide; and sulphuric acid, brine, caustic soda, soda ash and formic acid regulate pH.⁸¹

If not properly treated, the solid and liquid effluents from these stages are released into waterways, where they have devastating environmental effects. For instance, sodium sulphide and hydrated lime liquor exhibit a very high biological oxygen demand.⁸² This means that microorganisms need to consume large quantities of dissolved oxygen to break down these chemicals, leaving insufficient oxygen for other aquatic life. Dissolved oxygen levels, along with pH, salinity, nitrogen and phosphorus concentrations, are key indicators of aquatic ecosystem health. Caustic soda increases water salinity, which not only harms aquatic

⁷⁸ Tarika Powell, "Methane's 20- and 100-Year Climate Effect is Like 'CO₂ on Steroids,'" *Sightline Institute*, last modified February 12, 2019, <https://www.sightline.org/2019/02/12/methane-climate-change-co2-on-steroids/#:~:text=Methane%20is%20a%20very%20potent,otherwise%20go%20out%20into%20space>.

⁷⁹ Sivaram, Gopal and Barik, "Toxic Waste from Textile Industry," 55.

⁸⁰ Sivaram, Gopal and Barik, 56.

⁸¹ Sumita Dixit et al., "Toxic Hazards of Leather Industry and Technologies to Combat Threat: A Review," *Journal of Cleaner Production* 87 (2015): 40, <https://doi.org/10.1016/j.jclepro.2014.10.017>.

⁸² Sivaram, Gopal and Barik, "Toxic Waste from Textile Industry," 57.

organisms but also impacts agriculture when the water is reused for irrigation. As already mentioned, saline soils reduce plant growth and lower CO₂ absorption, contributing to climate change. Ammonium chloride is hazardous to marine life, while sulphuric acid is corrosive and can damage plant tissues and poison aquatic species. The sheer volume and toxicity of chemicals used in leather production underscore its far-reaching ecological consequences. Without rigorous wastewater treatment, the release of these substances into natural ecosystems contributes not only to localised pollution but also to global environmental degradation.

Some leather manufacturing processes are often perceived as more environmentally friendly. For example, vegetable tanning uses tannins extracted from tree bark. The tanning stage in leather manufacturing is key, because it makes the leather flexible, resistant to putrefaction, and ready for transformation into finished goods. This process is slow, as dye penetration alone takes around three weeks and is followed by treatment with sulphuric acid or sodium bicarbonate to remove excess dye.⁸³ Although vegetable tanning is less harmful than synthetic alternatives, it produces a stiffer leather that softens only with use over time. Chrome tanning, by contrast, is far more common due to its efficiency, ability to quickly produce softer and more durable leather, and its capacity for vibrant colour. However, this process is significantly more polluting. It relies on chromium salts, particularly trivalent chromium, which can oxidise into hexavalent chromium – a highly toxic and carcinogenic compound under certain conditions. The crusting stage follows tanning and involves drying, softening, buffing, oiling, polishing, embossing and glazing the leather. It fixes many of the chemicals used in earlier phases and gives leather its final texture and finish.

Critically, around 90% of pollution from leather manufacturing is generated during the beamhouse and tanning stages.⁸⁴ The scale of waste is staggering: from 1,000 kilograms of raw hide, only 200 kilograms of usable leather are produced.⁸⁵ The remainder becomes solid and liquid waste that, when mixed with water used throughout production, generates approximately 50,000 kilograms of toxic sludge, including around 5 kilograms of chromium.⁸⁶ If untreated or improperly treated, this effluent severely degrades ecosystems and poses major health risks to humans.⁸⁷ In Tamil Nadu, India, pollution from tanneries has

⁸³ Dixit et al., “Toxic Hazards of Leather Industry,” 40.

⁸⁴ Dixit et al., 40.

⁸⁵ Sivaram, Gopal and Barik, “Toxic Waste from Textile Industry,” 55.

⁸⁶ Sivaram, Gopal and Barik, 55–56.

⁸⁷ Dixit et al., “Toxic Hazards of Leather Industry,” 40.

contaminated more than 55,000 hectares of land, affecting drinking water sources for around five million people.⁸⁸ In Dhaka's Hazaribagh district, tanneries discharge three million litres of contaminated effluent into the Buriganga River every day.⁸⁹ Leather manufacturing is also a source of airborne pollution, as it emits volatile organic compounds such as aldehydes, amines, ammonia and hydrogen sulphide, which, when released without proper treatment, pollute the atmosphere and contribute to global warming.⁹⁰

Recycling

The fast fashion industry produces approximately 120 billion garments a year.⁹¹ Only an estimated 13% of these items is recycled after consumption.⁹² One major obstacle to recycling is the complexity of the garments themselves. Many are made from blended materials, combinations of synthetic and natural fibres, which are difficult to separate. Moreover, garments often include non-textile elements such as zippers, buttons, lace and trims, all of which must be manually removed before recycling.⁹³ Given the sheer volume of discarded clothing, this process is both labour-intensive and time-consuming. The condition of discarded garments also influences their recyclability. If in relatively good shape, items may be mechanically recycled into secondary products like lining materials, slippers, stuffing, sound-absorbing panels or industrial wipes. Mechanical recycling involves cleaning, shredding and reconfiguring textiles into new products. However, converting old natural textiles into new fibres is technically difficult. The fibres must be separated and reconstituted into felt, a process that reduces fibre quality and often necessitates blending with virgin material to maintain durability and strength.⁹⁴

Recycling synthetic textiles presents additional challenges. For instance, used polyester must undergo chemical decomposition to return to its base form – dimethyl terephthalate – before it can be reused in textile production. Separating blended fabrics like polyester-cotton also requires chemical solvents.⁹⁵ Therefore, despite the fact that recycling reduces the need for virgin fibre production, the recycling process requires the use of

⁸⁸ Dixit et al., 40.

⁸⁹ Uddin and Jeong, "Urban River Pollution in Bangladesh," 4.

⁹⁰ Dixit et al., "Toxic Hazards of Leather Industry," 40.

⁹¹ Moran, Eichelmann and Buggy, "The Challenge of 'Depeche Mode'" 7.

⁹² Ellen MacArthur Foundation, *A New Textiles Economy* (2017), 20, accessed April 18, 2023, <https://www.ellenmacarthurfoundation.org/a-new-textiles-economy>.

⁹³ Ellen MacArthur Foundation, 9766.

⁹⁴ Ellen MacArthur Foundation, 9766.

⁹⁵ Ellen MacArthur Foundation, 9766.

polluting chemicals. It is also the case that the quality of recovered polyester fibres is inferior to that of new material. As a result, recovered fibres are primarily used in the production of carpets, rugs and insulation products.⁹⁶ If the recycled materials are very old, the environmental consequences can even exceed the negative outcomes associated with producing new textiles. Tests by the Swedish Chemical Agency have shown that textiles produced prior to the legislated oversight of chemical processes contain high concentrations of toxic substances such as phthalates.⁹⁷ Recycling processes can release these substances, resulting in further environmental degradation. Textiles that are not recycled are either incinerated or sent to landfill, where they decompose and release methane in the atmosphere.⁹⁸ Synthetic fibres, however, do not break down easily and can remain in landfill for over 200 years. During this time, residual manufacturing toxins not removed during production leach into the ground.⁹⁹ These substances contribute to global warming through ecosystem degradation and chain reactions that harm plants, wildlife and microorganisms.¹⁰⁰

Large quantities of second-hand clothing from industrialised nations are sold by sorting or recycling centres to independent enterprises in developing countries. Ghana, Nigeria, Tanzania and Kenya are among the largest importers.¹⁰¹ In these regions, demand for used garments is high due to limited local textile production.¹⁰² Nevertheless, a substantial portion of imported apparel is not usable and ends up either rotting in landfill or being burned. These are often items discarded by charity shops in wealthier nations due to being too damaged or soiled to be resold. They are bundled into bales and exported to Africa.¹⁰³ A documentary produced by the Australian Broadcasting Corporation notes that “15 million used garments pour into Accra every week from the United Kingdom, Europe, North America and Australia, flooding the city’s sprawling clothing market. An estimated 40 per cent are of such poor quality they are deemed worthless on arrival and end up dumped in landfill.”¹⁰⁴

⁹⁶ Palacios-Mateo, van der Meer, and Seide, “Analysis of the Polyester Clothing Value Chain,” 15.

⁹⁷ KEMI Swedish Chemical Agency, *Chemicals in Textiles – Risks to Human Health and the Environment* (Stockholm: Swedish Chemical Agency, 2014), 31, accessed April 29, 2023, <https://www.kemi.se/download/18.6df1d3df171c243fb23a98f3/1591454110491/rapport-6-14-chemicals-in-textiles.pdf>.

⁹⁸ Powell, “Methane’s 20- and 100-Year Climate Effect.”

⁹⁹ KEMI Swedish Chemical Agency, *Chemicals in Textiles*, 33.

¹⁰⁰ Ellen MacArthur Foundation, *A New Textiles Economy*, 91–92.

¹⁰¹ Madeleine Cobbing et al., *Poisoned Gifts* (Hamburg: Greenpeace, 2022), 5, <https://www.greenpeace.org/international/publication/53355/poisoned-gifts-report-fast-fashion-textile-waste-disguised-as-second-hand-clothes-exported-to-east-africa/>.

¹⁰² Anguelov, *The Dirty Side of the Garment Industry*, 110.

¹⁰³ Cobbing et al., *Poisoned Gifts*, 6.

¹⁰⁴ Linton Besser, “Dead White Man’s Clothes,” *ABC News*, last modified October 22, 2021, <https://www.abc.net.au/news/2021-08-12/fast-fashion-turning-parts-ghana-into-toxic->

Given that over 60% of fibres used by the fashion industry is polyester, the toxicity associated with landfill or incineration of these garments cannot be underestimated. Although Rwanda, Kenya, Tanzania and Uganda proposed a ban on used clothing imports from Western countries by 2018, they ultimately did not implement it. These nations are members of the United States African Growth and Opportunity Act (AGOA), which allows tariff-free access to U.S. markets. When the proposed ban was announced, North America threatened to revoke AGOA privileges. All four countries reversed their decision, except for Rwanda, which retained high import tariffs but stopped short of a full ban.¹⁰⁵ As a result, vast quantities of used clothing continue to arrive in Africa. The industry term *circularity* has become a fashionable talking point in Western discourse, but the concept is misleading. Greenpeace reports that less than 1% of garments are recycled into new products, while the production of new clothing continues to increase by an average of 2.7% per year.¹⁰⁶ Demonstrably, the notion of circularity – whether in fashion or other domains of production – joins the long catalogue of myths that continue to populate the sustainability discourse.

Nevertheless, clothing remains a necessity and, for most people, cheap fashion is the only viable economic option. As such, sustainable consumption is often a privilege reserved for the wealthy. This reality makes the fashion industry one of the most pressing environmental dilemmas of our time. Its supply chains are so deeply embedded in global economic systems that no viable or comprehensive solution has yet emerged. The fast fashion model continues to grow, offering little incentive for companies to invest in technological innovation aimed at reducing environmental harm. Instead, most research and development within the industry focuses on creating new poly-blends – fabrics that increase consumer choice at lower prices, thereby boosting retail profits.¹⁰⁷ Environmental research is primarily conducted by actors outside the fashion industry, and the impact of such research on public opinion and policy remains limited. While public discourse about the environmental costs of fashion is minimal and often superficial, even less attention is paid to the human cost embedded in many popular styles. Fabric treatments such as sandblasting, used to achieve the distressed look in denim, cause silicosis, a fatal lung disease, due to a lack of adequate safety measures. Such practices are part of a wider pattern of abuse within the fashion industry,

landfill/100358702#:~:text=On%20the%20banks%20of%20the,per%20cent%20%E2%80%94%20is%20unwanted%20clothing.

¹⁰⁵ Garth Frazer, “America’s Petty Policy on Used Clothes for Africa,” *The Conversation*, April 18, 2018, <https://theconversation.com/americas-petty-policy-on-used-clothes-for-africa-95132>.

¹⁰⁶ Cobbing, et al., *Poisoned Gifts*, 5.

¹⁰⁷ Anguelov, *The Dirty Side of the Garment Industry*, 170.

among them, the exploitation of labour and, perhaps most egregiously, the killing of animals for fur. These issues remain central to the industry's profitability.

It is also notable that while fast fashion consumption occurs primarily in industrialised countries, the most environmentally damaging aspects – production and disposal – are outsourced to developing nations. In effect, while profits stay in the Western world, environmental degradation is exported.¹⁰⁸ Such dynamics illustrate the complexities of the environmental crisis. Fashion's globalised supply chains, socio-economic inequities and structurally embedded consumption patterns defy simple solutions. Without a systemic, globalised and interdisciplinary approach that addresses the intersection of social, economic and ecological dimensions, meaningful change remains out of reach. As environmental art operates within these same systems, it faces parallel constraints. Just as broader environmental activism struggles to tackle the systemic drivers of environmental degradation, environmental art, by extension, is unlikely to generate the structural change needed to disrupt unsustainable production and consumption.

¹⁰⁸ Niimikäki et al., "The Environmental Price of Fast Fashion," 191.

4. ENVIRONMENTAL ARTISTS: CASE STUDIES

The following case studies establish the limits of contemporary art as a means, or tool, of environmental activism. They exemplify the inherent conflict between the aesthetic framework and concrete instrumental action. Edward Burtynsky, Olafur Eliasson, Tomás Saraceno and Lara Almarçegui are all artists who engage in environmental concerns. Burtynsky's photographs expose environmental contamination, Eliasson's installations convey how representation mediates the experience of nature, Saraceno's works, inspired by spider webs, gesture towards the interconnectedness of all life, and Almarçegui's works highlight how urbanisation drives extractive practices and the exploitation of land. These artists are relevant to this project because their exhibitions consistently receive significant global attention and currency, and their works have a significant role in environmental discourse, or at least that is how they are transacted in art world circles. However, whether their contributions are effective in terms of changing minds and policies is another matter altogether. Indeed, one can speculate that perhaps the obverse is the case, in that the effort spent in engaging with these issues artistically sublimates the need for basic action. It is important to clarify that Burtynsky, Eliasson, Saraceno and Almarçegui are not exclusive in this domain. They have been selected because their practices typically represent the problems germane to the use of art as a means of environmental activism.

The analysis of the artworks in the discussion to follow establishes how the tension between representation and political activism creates an ambiguity that inhibits the latent emancipatory potential of an artwork. Whether the artist depicts the problem at hand in a highly aestheticised manner or in a more nuanced, symbolic manner, such tension is indisputably unavoidable. The symbolic depiction of a political problem necessarily entails that the artwork must contain elements of the problem that it points to so that the issue is recognisable to the viewer. This type of representation in effect reproduces the problem and, in doing so, risks its reinforcement and perpetuation. Contradictions can also emerge when the logic of aesthetic prevails over the political commentary, as the rendering of an issue in a beautiful form presents an additional set of problems that further negate the artwork's call for political action. For a start, beauty overshadows the urgency of the message. Even though the aesthetic rendering of a problem is precisely what distinguishes an artwork from mere sloganeering, the presentation of environmental problems through a framework of beauty creates an ambiguity that jars with messages that express a deep crisis. Another important

consideration is that when an artwork frames ecological devastation through beauty, the activist attempt to address environmental collapse becomes a form of commodification. The depredation of nature turns into an object of cultural consumption.

In light of these considerations, it is plausible to doubt the ability of the artworks critiqued in the space of this section to compel, in the material world, any practical political solution of substance. The works prove inadequate as environmental activism. It is understandable that the reader could think that such a conclusion is drastic, negative, reactive or highly captious. However, when an artist chooses to address environmental problems through art, the attempt calls for an honest and thorough evaluation in order to address both the question and the answer in the work. It is crucial to expose the ethical implications that ensue when art seeks to address crucial problems such as the climate crisis. And while an artwork can exercise a soft influence through the creation of knowledge and awareness, that does not constitute environmental activism. Any notion that such differentiation is mere semantics can be cast asunder by the fact that a work can be informative of a problem but not necessarily incense a viewer and prompt an impelling demand for a solution.

If environmental activism can indeed be described as a practical action that catalyses a tangible and discernible response in the material world, then it is likely that the answer in the analysed artworks is found wanting. While it goes without saying that these problems and contradictions arise despite good faith on the part of the artist, it must also be said that certain artists garner much of their credibility from their good intentions. However, their sincere motives are ultimately naïve and misplaced because art, in its openness to multiple interpretations, transcends a singular meaning. As a result, while the very ambiguity of the work is what gives it depth and richness, it also prevents the art from functioning as an effective call for concrete political action.

Edward Burtynsky

Edward Burtynsky's large-scale photographic images expose the magnitude of environmental destruction that results from industry, oil and mining. These landscapes draw attention to the need for more stringent controls and regulations that surround the management of waste on extraction sites. Insofar as the apocalyptic visions force the viewer to confront a shocking reality, they have the potential to catalyse a deeper reflection on the ethics of extractive industries. After all, a shift in public perception and opinion is a starting point for building momentum toward meaningful change in public policy. However, what hinders Burtynsky's artworks from being a catalyst for such shift is the extent to which the landscapes are

aestheticised. They are rendered so visually mesmerising that they risk inducing admiration rather than critique. This beauty diminishes their critical potential as it confuses the viewer with the troubling notion that the destruction of nature can elicit pleasure rather than concern, let alone cause distress. As the artworks depict the tangible consequences of extraction in haunting details, they have the potential to provoke reflection on sustainable, ethical and responsible industrial practices. Yet, their striking beauty ultimately romanticises destruction and numbs the viewer from the gravity of the problems at stake. From this perspective, Burtynsky's artworks effectively reinforce the very systems of environmental despoliation they seek to expose as their aesthetic appeal normalises the horror of ecological collapse.

At first glance, the blazing red swathe that sweeps across the picture plane of *Nickel Tailings #35* (1996) (fig. 4.1) resembles a painterly gesture. Upon closer inspection, the ripples reveal that the red substance is a river. The water looks like liquid fire that appears to scorch everything in its path. The ominous scene bears more resemblance to an inferno than to an earthly landscape. Captured from an aerial perspective, the photograph shows a mining site in Sudbury, Ontario. A mixture of particles known as tailings cause the red colour of the river. Tailings are chemical substances, organic matter, unrecoverable metal particles, and effluent from the processes of extraction from ore.¹ Mines have storage facilities, such as dams or pits, that attempt to contain these substances because they are highly toxic.² As the images powerfully suggest, such toxicity leaves a devastating mark on the surrounding environments. The portrayed destruction provokes a sense of dread. At the same time, *Nickel Tailings #35* captivates the viewer with its saturated colours and the dramatic contrast between the dark foreground and the soft, hazy, whitish horizon line. The landscape is at once eerie and magnificent, bordering on the sublime.

In her analysis of contaminated landscapes in photography, Jennifer Peeples introduces the concept of the "toxic sublime, arguing that the tension between attraction and repulsion can reframe perception and catalyse social awareness."³ According to Peeples, straightforward presentation of environmental devastation can prove too confronting for the viewer, whereas sublime imagery can sustain the viewer's attention long enough to catalyse emotional response and foster new understandings.⁴ While in theory this notion is

¹ "What Are Tailings and TSF?," BHP, accessed May 17, 2024, <https://www.bhp.com/sustainability/tailings-storage-facilities/what-are-tailings-storage-facilities>.

² "What Are Tailings and TSF?"

³ Jennifer Peeples, "Toxic Sublime: Imaging Contaminated Landscapes," *Environmental Communication: A Journal of Nature and Culture* 5, no. 4 (2011): 373–392, <https://doi.org/10.1080/17524032.2011.616516>.

⁴ Peeples, 376.

compelling, in practice an image that proposes destruction as a view to be enjoyed, even relished, is unlikely to galvanise the conscience of the viewer. Sublime beauty can be a double-edged sword, because it draws the viewer in but at the same time it can also elicit a sense of powerlessness or awe so overwhelming that it neutralises political engagement. In the case of *Nickel Tailings #35*, the majestic visual spectacle may ultimately obfuscate the gravity of the ecological crisis it represents. Rather than galvanising action, the image diverts attention from the depth and complexity of an environmental problem that is simply too difficult to deal with. The sublime, in this context, becomes a form of distraction that enables disavowal, allowing the viewer to relinquish responsibility and disengage from the critical need for environmental action.⁵

It is undeniable that Burtynsky's photographs bring to visibility certain destructive aspects of industry that generally remain hidden from public view. The contamination that the images document often occurs in remote locations, making it difficult to draw public attention to these toxic sites.⁶ Moreover, the lack of institutional or corporate transparency regarding environmental degradation renders Burtynsky's photographs all the more important to environmental discourse.⁷ The images implicitly raise questions about the absence of accountability from governments and industry, raising concerns about the systems that suppress awareness of such damage. This exposure of information hitherto invisible offers the possibility of a reading through the lens of Jacques Rancière's "distribution of the sensible".⁸ Burtynsky's artworks bring attention not only to the issues themselves, but also to the ways in which such issues are rendered visible or pushed into invisibility by dominant power structures. The distribution of the sensible is neither happenstance nor neutral. It is a framework of available information that importantly contributes to shaping culture, perceptions and social processes, and determines who drives political discourse and what is worthy of political engagement. What is seen, as well as what is heard and spoken about, is orchestrated by the prevailing structures of influence to maintain existing systems of power.⁹ From Rancière's perspective, the exposure of new information can disrupt these established

⁵ Žižek, *Living in the End Times*, 4–6.

⁶ Phaedra C. Pezzullo, "Tourist Itineraries," in *Toxic Tourism: Rhetorics of Pollution, Travel and Environmental Justice* (Tuscaloosa: University of Alabama Press, 2007), 29, <https://hdl-handle-net.ap1.proxy.openathens.net/2027/he31843.0001.001>.

⁷ Pezzullo, 29.

⁸ Stephen Zepke, "For Those Who Disagree – Rancière and the Sublime," in *Sublime Art: Towards an Aesthetics of the Future* (Edinburgh: University Press, 2017), 206–208, <https://doi.org/10.3366/edinburgh/9780748669998.003.0006>.

⁹ Jacques Rancière, "The Distribution of the Sensible," in *Aesthetics and Politics*, trans. Gabriel Rockhill (London: Continuum, 2004), 12–45.

perceptions and make space for alternative political subjectivities.¹⁰ The revelation becomes an act of political subversion.

Through such a lens, *Nickel Tailings #35* holds the capacity to reconfigure the aesthetic regime because it exposes the otherwise obscured consequences of industrial activity, consequences often concealed by political inertia and corporate interests. The image invites the viewer to reconsider the true cost of industrial progress and to recognise the urgent need for climate action. However, the very elements that render the image striking – its stunning colours, the compositional arrangements and the aerial perspective, also diminish its potential to disrupt the dominant political order. The photograph’s sublime beauty transforms environmental destruction into something that is visually gratifying. This gratification dulls the viewer’s emotional response and numbs any outrage that the image could possibly instigate. There is a case to be made, then, that the sublime beauty of *Nickel Tailings #35* achieves the opposite effect of provoking an outcry for stricter regulatory measures to protect the environment. Instead, the viewing pleasure normalises the destruction of nature and generates indifference.

The almost abstract rendering of *Nickel Tailings #35* further inhibits its potential to produce new perceptions. The aerial view of the tailings channel presents an expansive scene, but without any visual reference point in terms of physical size it is difficult to determine the scale of the landscape, which prevents the viewer from grasping its physical magnitude. This disorientation shifts the image from straightforward representation towards abstraction. Such tension undermines the work’s activist potential because the visual abstraction of destruction diminishes the concreteness of the problem. Whereas contamination results in enormous physical suffering and death that extensively spread throughout eco-systems, *Nickel Tailings #35* reduces toxicity to a mere idea.

The dematerialisation of the issues that relate to environmental depredation is equally apparent in the desolate landscape of *Oil Fields #2* (2002) (fig. 4.2). The multitude of pumpjacks and the disappearance of the oil field into the horizon line bear a sense of interminability.¹¹ While this idea of vastness effectively reflects the ungraspable scale of the oil extraction industry, the sense of enormity also places the problem outside the grasp of the

¹⁰ Gabriel Rockhill, “The Politics of Aesthetics: Political History and the Hermeneutics of Art,” in *Jacques Rancière: History, Politics, Aesthetics*, ed. Gabriel Rockhill and Philip Watts (Durham, NC: Duke University Press, 2009), 199–200, <https://doi.org/10.1215/9780822390930>.

¹¹ James Nisbet, “Environmental Abstraction and the Polluted Image,” *American Art* 31, no. 1 (2017): 114–131, <https://doi.org/10.1086/692160>.

viewer. The disconnection between the viewer and the depicted problem is amplified by the abstraction that the dominance of colour confers to the overall image. If viewers were to squint their eyes, the horizontal division of the brown and beige colours would be evocative of a Rothko painting, transforming the scene into a painterly composition rather than a representation of environmental destruction. While this painterly aesthetic is visually compelling, it distances the viewer from the ruinous implications of oil extraction. The lifeless and arid landscape in *Oil Fields #2*, although suggestive of ecological collapse, is reduced to a beautiful but inert two-tone image.

Burtynsky resists the idea that a highly aestheticised photograph can change the meaning of the image captured because he argues that not even realistic painters can capture the world as accurately as photography can.¹² However, it is equally plausible to consider that the use of aesthetic devices can guide how the viewer perceives the content, thus undermining this notion of photography's indexicality. When Burtynsky takes his photographs, the choice of colour, composition, distance, height and time of day are a "dance with the subject."¹³ He makes a clear distinction between taking pictures and making pictures, thus emphasising his authorship and intention.¹⁴ This is apparent in *Oil Fields #2*, where the aesthetic priority of colour and composition jars with the poignancy of the image's content and its implications. As a result, the conflict obfuscates the magnitude of the potential message – the material destruction that ensues from extractive practices. The ramifications of toxicity spread widely as ecosystems do not have fixed boundaries.¹⁵ Given the inextricable connection between ecosystems and human health, contamination has extensive, painful and protracted consequences for both nature and humans.¹⁶ This damage often goes undetected for years until it becomes materially manifest as disease and death.¹⁷ Burtynsky's images risk dematerialising the crisis itself, as they dilute the political power inherent photography's indexical capacity to bear witness. The very choices that make the images visually compelling may simultaneously weaken their ability to provoke empathy or action.

¹² Robert Enright, "The Fine and Excruciating Construction of the World," *Border Crossings* 30, no. 1 (March 2011): 22–37, <https://bordercrossingsmag.com/article/the-fine-and-excruciating-construction-of-the-world-an-interview-with-ed-bu/text/javascript>.

¹³ Enright, 22–37.

¹⁴ Enright, 22–37.

¹⁵ Nisbet, "Environmental Abstraction and the Polluted Image," 117.

¹⁶ Pierpaolo Mudu, Benedetto Terracini, and Marco Martuzzi, *Human Health in Areas with Industrial Contamination* (Copenhagen: World Health Organization, 2014), 3.

¹⁷ Peebles, "Toxic Sublime," 374.

In essence, Burtynsky's highly aestheticised photographs transform destruction into a magnificent landscape, such that he garners moral profit from evincing moral concern while also capitalising on aesthetic effects. This diminishes the artworks' ability to challenge the existing order of perceptions, reconfigure social processes, or forge new political identities. Instead, the depictions merely become an exercise in virtue signalling. The fact that Burtynsky deliberately keeps his artworks ambiguous and open to interpretation further adds to their ineffectiveness as environmental activism.¹⁸ He refuses to establish his own position as an "environmental propagandist."¹⁹ Rather, Burtynsky makes deliberate aesthetic choices that situate his artworks in an uncommitted position, which, according to Peeples, elicits "individual deliberation" on the part of the viewer.²⁰

Burtynsky maintains that a personal interpretation can disrupt perceptions and lead to political action.²¹ The risk is that a broad interpretative stance can also open the door to alternative readings of the works. A possible viewing lens for the industrial sublime is the ingenuity and innovative spirit of humanity, as well as the idea of progress at any cost. As Murray Whyte writes, viewers who have a bias towards the benefits of industrialisation could easily interpret Burtynsky's images as a tribute to the scale and achievements of industry. This would be a perception likely to acclaim capitalism and glorify certain attitudes that support the capitalist mandate for profit at all costs, including the depredation of nature.²² Such a deliberation about an environmental artwork would stand completely counter to the idea of art as a tool for environmental activism and instead sustain the status quo.

Olafur Eliasson

With the elements of light, colour, temperature, water and ice, Olafur Eliasson creates installations that engage the viewer's sensory apparatus and foster a heightened awareness of the surroundings. In *The Weather Project* (fig. 4.3), installed in the Tate Modern's Turbine Hall in 2003, Eliasson reproduces atmospheric elements such as mist and sunshine. The dominating elements of the installation are its sheer scale, the soft golden glow that

¹⁸ Murray Whyte, "His Changing World: Edward Burtynsky's Celebrated Photos Captured Global Developments Industrialization, Waste without Judgment. But Now He Advocates for a Sustainable Planet. It's a Popular Move, but Will It Hurt His Art?," *Toronto Star*, December 03, 2006, <http://ezproxy.library.usyd.edu.au/login?url=https://www.proquest.com/newspapers/his-changing-world-edward-burtynskys-celebrated/docview/439132567/se-2>.

¹⁹ Lori Pauli quoted in Whyte, "His Changing World."

²⁰ Peeples, "Toxic Sublime," 378.

²¹ Whyte, "His Changing World."

²² Whyte, "His Changing World."

penetrates the entire hall, and the mysterious ambience created by the haze that results from a constant fine spray of water into the atmosphere. The mist can be interpreted as fog but can also be conceived as an allusion to smog. In this way, the work conflates aspects of the sublime and the poetic with environmental issues. While this conflation lends the installation an aura of environmental activism, the work functions purely in an aesthetic manner. In fact, the visual beauty and the immersive quality of *The Weather Project* create such a pleasurable experience for the viewer that the sensuousness of the encounter overshadows any critique that the work is intended to convey. The installation is so mesmerising and absorbing that it can lull the visitor into an almost hypnotic state of torpor. Such languid response begs a question: Does the dreamy haze enable a transcendent experience of awareness and reflection, or does it induce a mind-numbing slumber that dulls critical engagement and obscures the urgency of the environmental crisis?

The immediate encounter with *The Weather Project* is the vision of a large glowing disc that illuminates the surroundings from high above against the back wall of the exhibition hall. The disc emanates a highly saturated glow that, in contrast with the surrounding darkness, establishes a black and orange colour combination that dominates the space. An artificial mist fills the air and partially obscures the hall structure. The fine spray renders the air dense, almost tangible, creating an uncanny sensation of stillness that pervades the hall's interior and envelops the viewer.²³ The ambience hovers between the ominous and the supernatural. Visitors lie on the floor, basking in the hypnotising effect of the haze, the pervasive golden radiance, and the absorbing reflection of their own image in the ceiling mirrors. *The Weather Project* reiterates the fundamental idea that conceptions of nature are not neutral but shaped by cultural mediation and representation.²⁴ As such, *The Weather Project* gestures towards the cultural perspectives of nature as an object or category – perspectives that ultimately inform the exploitative thinking at the root of the climate crisis.²⁵ By immersing viewers in a constructed environment, the work makes them aware that their perception of nature is filtered through both social and representational frameworks. This awareness relies on viewers to reflect on how they experience the artwork so they can realise that the way they see and understand nature is shaped by culture, not by nature itself. In this

²³ Sergio Fava, "Reclaiming Futures: Olafur Eliasson's Weather Project," in *Environmental Apocalypse in Science and Art* (New York: Routledge, 2013), 155.

²⁴ Fava, 158.

²⁵ Malcolm Miles, "Representing Nature: Art and Climate Change," *Cultural Geographies* 17, no. 1 (January 2010): 19–35, <https://doi.org/10.1177/1474474009349997>.

regard, during the course of an interview with Chris Gilbert, Eliasson expresses the view that art can shift consciousness and create new political subjectivities when viewers become cognisant of their own perceptions in response to the surrounding environment.²⁶ In *The Weather Project*, the sensory alertness elicited by the constructed atmosphere, together with the self-consciousness provoked by the overhead mirrors, purportedly guides this critical introspection.

Fundamentally, *The Weather Project* acts as a vehicle for viewers to become aware of themselves, so they can glean new understandings and contribute to generate new social processes.²⁷ However, it is difficult to conceive how a critique that operates at such a subtle level could effectively hit its mark.²⁸ The possibility of any cathartic insight becomes lost within the spectacular aspects of the artwork. Shrouded by the golden mist and dazed by the beauty of the light refracted through the ghostly water particles that fill the air, viewers revel in the spellbinding effect that ensues as they stare at their own reflection in the mirrors above. In this space, visitors do not merely experience an alluring immersion in the spectacle; they become part of the spectacle.²⁹ The mirrors transform the viewers into the subject of the work and place them at the centre of the experience. As a result, instead of facilitating self-reflexivity, the mirrors mediate a hypnotic state of narcissistic self-absorption as visitors get engrossed in their own image.³⁰ While this communal experience of a constructed nature carries a reminder that addressing the climate crisis requires collective action, that potential is compromised as the line between perceptual awareness and self-centredness becomes blurred. Moreover, the shallow gratification of selfies and the external focus towards photo and video documentation of the surroundings further dissipate any prospect for the viewer to be fully present in the moment and consciously process the cognitive dissonance that the installation generates. Any possibility to glean the cathartic insight that cultural constructs of nature are contingent upon individual perception vanishes in the intellectual void of art as entertainment.

The devices that generate the atmospheric elements of *The Weather Project* are deliberately visible. The overtness of the artifice calls attention to the notion that conceptions

²⁶ Chris Gilbert and Olafur Eliasson, "Olafur Eliasson," *Bomb*, no. 88 (2004): 22–29, <https://www.jstor.org/stable/40427639>.

²⁷ Louise Hornby, "Appropriating the Weather: Olafur Eliasson and Climate Control," *Environmental Humanities* 9, no. 1 (2017): 60–83, <https://doi.org/10.1215/22011919-3829136>.

²⁸ Claire Bishop, *Installation Art: A Critical History* (London: Tate Publishing, 2005), 77.

²⁹ Hornby, "Appropriating the Weather," 73.

³⁰ Hornby, 73.

of nature emerge largely through mediated experience.³¹ Nozzles, clearly in plain view, spray water mist in the air and create the hazy atmosphere. The golden glow emanates from a semicircular metal structure noticeably backlit by 200 low-pressure sodium lamps which emit a single colour – the kind commonly used for street lighting.³² The visibility of the devices that generate the effects conveys that nature is consistently packaged and proposed in terms of representation. In the context of the climate crisis, the implications of this concept are significant because mediated notions of nature create a fertile ground for constructed narratives that commercial or political interests appropriate to manipulate public perception. With time, such narratives become so entrenched in culture that they mystify the causes of environmental problems and make it difficult, if not impossible, to find solutions. However, *The Weather Project* falls short of delivering such an understanding because the installation displays nothing that blatantly critiques or problematises representation. If anything, the replication of climatic conditions contradicts the political content entrenched in the overtness of the *mise en scène*, which, instead, points to the human ability to reproduce atmospheric elements. Through this lens, the installation can be interpreted as an implicit endorsement of the technological mastery of nature at the core of anthropocentric attitudes that inform the objectification of nature and sanction its exploitation. In that respect, not only does *The Weather Project* fail to function as an activist call to action, but it does the opposite, as it reinforces existing conceptions of nature as a controllable object – an attitude that contributes directly to the environmental crisis.

Some of Eliasson's earlier works, such as the *Glacier Melt Series 1999/2019* (2019) (fig. 4.4), could perhaps be considered more activist in the way they overtly engage with climate change. In this series, Eliasson juxtaposes aerial photographs of Icelandic glaciers taken in 1999 with images of the same sites captured two decades later. The contrast is dramatic, as the comparison clearly shows the disappearance of the ice. Glaciers are usually perceived as emblematic of the climate emergency because their melting is the tangible manifestation of global warming. That said, although the series communicates the gravity of the environmental crisis with stark clarity, it lacks the sensuous or affective qualities that characterise *The Weather Project*. Instead, the images veer toward documentation, as their didactic tone is more reminiscent of a *National Geographic* magazine feature than a gallery artwork. In this way, the two works present a reversal of artistic efficacy: *The Weather*

³¹ Bishop, *Installation Art*, 76–77.

³² Eli Park Sorensen and Marvin Lee, "Olafur Eliasson's *The Weather Project* and the Birth of the Political," *Humanities Bulletin* 4, no. 1 (2021): 117–132, <https://journals.lapub.co.uk/index.php/HB/article/view/1982>.

Project captivates through its poetic beauty and immersive experience but lacks a direct call to environmental consciousness, while the *Glacier Melt Series 1999/2019* delivers a clear-cut climate message but does so with minimal aesthetic mediation.

Another project by Eliasson that can be seen as activist is *Little Sun* (fig. 4.5), launched in 2012 – a small solar-powered LED lamp in the shape of a flower, designed to promote sustainable energy access. Eliasson describes it as “a work of art that works in life.”³³ For every lamp sold at full price in the Western world, Eliasson sells a lamp at a lower price in the Global South, where it could potentially deliver affordable lighting to the 1.2 billion people who do not have access to electricity.³⁴ In that regard, *Little Sun* is a worthy social endeavour. Eliasson’s website describes the project with one-word headings that flash across the screen, fade out and reappear as a different text. The terms *solar* and *climate* convey that *Little Sun* is also an environmentally significant venture.³⁵ It provides a clean alternative to the prevalent use of kerosene lamps in the Global South. Kerosene is a fossil fuel that emits CO₂ and other toxic fumes when burnt. It is a pollutant, it poisons living beings and contributes to global warming. Yet, *Little Sun* is mass-produced in China and sold through Ikea.³⁶ This means that the lamp remains embedded in the same carbon-intensive systems of industrial production, global distribution and mass retail that both underpin climate change and produce the inequalities that the project claims to address.

While the reduction of kerosene makes *Little Sun* an important project, the environmental claims embedded in its framing through the use of charged words such as *solar* and *climate* nonetheless warrant some critical scrutiny. Figures show that the number of *Little Sun* lamps sold as at 2024 was one million, half of which were sold in off-grid areas in sub-Saharan countries.³⁷ This means that, in the future, there will be a million solar cells (and other components of the lamps) added to the worldwide overabundance of existing and upcoming obsolescent solar cells needing to be recycled. As Chapter 3 reveals, much e-waste from the Global North finds its way, both legally and illegally, to the Global South, where recycling faces a blatant lack of regulation, regulatory oversight and, like the West,

³³ “Little Sun, 2012,” Artwork, Olafur Eliasson, accessed May 17, 2024, <https://olafureliasson.net/artwork/little-sun-2012/#:~:text=Olafur%20Eliasson's%20solar%20light%2Dbased,outside%20the%20electrical%20grid%20system.>

³⁴ “Little Sun, 2012.”

³⁵ “Little Sun, 2012.”

³⁶ “SAMMANLÄNKAD Collection Explores Solar Powered Light Sources,” Collaboration News, Newsroom, IKEA Global, accessed May 17, 2024, <https://www.ikea.com/global/en/newsroom/collaborations/ikea-and-little-sun-launch-sammanlankad-exploring-light-sources-powered-by-the-sun-230329/>.

³⁷ “One Million Solar Lamps!,” Little Sun, accessed May 17, 2024, <https://littlesun.org/blog/2019/12/17/one-million-solar-lamps/>.

infrastructure. It is also noteworthy that each *Little Sun* has a rechargeable battery that can last up to five years if used every day.³⁸ After that time, there will be up to one million discarded batteries. The implication is the possible dispersion of toxic components into the environment from improper disposal or lack of disposal facilities. In the spirit of clarity, it is key to mention that these evaluations are not intended to denigrate a worthwhile project. The considerations serve the sole purpose to demonstrate that environmental sustainability is such a complex issue that even the best-intentioned artwork will inevitably encounter problems and contradictions that diminish its effectiveness as environmental activism.

Further inconsistencies beset the *Little Sun* and *The Weather Project*. They were both presented at the Tate Modern which, ironically, from 1990 until 2016 received financial sponsorship from oil company BP, a major contributor to the global warming problem that Eliasson's artworks critique. BP is also responsible for the 2010 Deepwater Horizon oil spill in the Gulf of Mexico, the largest spill of oil in the history of marine oil drilling. Public pressure and intense activism campaigns compelled the Tate Modern to end the 26-year connection with BP in 2017.³⁹ When *The Weather Project* opened in 2003, the Tate Modern was still receiving sponsorship from BP. *The Weather Project* was also part of the Unilever Series, a sequence of annual art exhibitions at the Turbine Hall sponsored by Unilever, a giant multinational corporation. In 2001, Hindustan Unilever Limited in India shut down its thermometer factory when Tamil Nadu authorities found that the company was dumping toxic waste into the surrounding environment.⁴⁰ Environmentally controversial corporations often use art sponsorships to clean their own image, commonly referred to as *artwashing*. The association of the art world with polluting companies is yet another paradox that diminishes the critical potential of an environmental artwork.

Tomás Saraceno

In contrast to Olafur Eliasson's majestic lyrical scenes and Edward Burtynsky's sublime representations of destruction, Tomás Saraceno makes artworks with materials produced by

³⁸ "FAQ," Little Sun Original, Little Sun, accessed May 17, 2024, <https://littlesun.org/faqs/#:~:text=Little%20Sun%20Original%20contains%20a,5%20years%20when%20used%20daily>.

³⁹ Henry Neuendorf, "Oil Giant BP to End Controversial 26-Year Tate Sponsorship in 2017," *Artnet*, March 11, 2016, <https://news.artnet.com/art-world/bp-ends-tate-sponsorship-2017-447041#:~:text=Oil%20giant%20BP%20will%20end,over%20the%20last%20few%20years>.

⁴⁰ Agence France-Presse, "Unilever Settles Dispute Over Mercury Poisoning in India," *The Guardian*, March 10, 2016, <https://www.theguardian.com/environment/2016/mar/09/unilever-settles-dispute-over-mercury-poisoning-in-india>.

live animals. Saraceno keeps hundreds of spiders in his studio. Under his guidance and control, the arachnids weave webs that he either exhibits directly or uses as inspiration for his installations. The spider web artworks invite reflection on the fragility of ecosystems, the interconnectedness of all life, the need to respect nature, and the imperative to reconsider the primacy of the human species in the hierarchy of ecosystems.⁴¹ Saraceno's spider webs are globally acclaimed due to the perception that they are artistic, scientific, political and epistemological.⁴² Regardless of such popularity, the artworks call for a critical discussion in relation to the use of live animals in a human-controlled setting for the sake of art production. This aspect of Saraceno's practice compels ethical considerations regarding non-human agency, animal rights and the exercise of human power over other species. The critique pivots around the doubt as to whether Saraceno's use of spiders can be construed as exploitative, hence contradictory to the artworks' invitation to reassess human supremacy in ecosystems.

Saraceno's spiders web artworks are complex and intricate web structures that spiders weave on open frames in the artist's studio. The frame structures sit in water, meaning that the spiders cannot wander away. They are, essentially, held captive. A studio assistant takes care of the spiders on a daily basis. Each morning begins by saving the ones that accidentally fall into the water, provided the assistant gets to the studio before they drown. The assistant also feeds the spiders and monitors the progress of their webs, evaluating whether they are complete or if further weaving is needed before the web is considered good enough to be an artwork. Saraceno uses various species of arachnids to produce a complex, hybrid web.⁴³ After each spider has woven its web, the arachnid is removed from the frame. Another spider of a different species is then introduced into the frame to weave its web, joining it with the previous spider's web.⁴⁴

Given that each type of arachnid produces a web with a different pattern and different material consistency, the final web is a very intricate and aesthetically beautiful network of filaments, textures and patterns. *Hybrid Solitary Semi-Social BD+23 4615 Built by: a Solo Nephila Inaurata - Four weeks, an Ensemble of Cyrtophora Citricola - Five Weeks, rotated 90°* (2015) (fig. 4.6) is an example of such web artworks. It is woven by two different spiders

⁴¹ Joanna Page, "Tomás Saraceno and the Ethics of the Sublime Anthropocene," in *Latin American Culture and the Limits of the Human*, ed. Lucy Bollington and Paul Merchant (Gainesville: University of Florida Press, 2020), 203.

⁴² Jussi Parikka, "A Recursive Web of Models: Studio Tomás Saraceno's Working Objects," *Configurations* 28, no. 3 (2020): 309–332, <https://doi.org/10.1353/con.2020.0019>.

⁴³ Sasha Engelmann, "Social Spiders and Hybrid Webs at Studio Tomás Saraceno," *Cultural Geographies* 24, no. 1 (2017): 161–169, <https://doi.org/10.1177/1474474016647371>.

⁴⁴ Engelmann, 161–169.

that both belong to the Araneidae family, or orb weavers. The aesthetic configuration of the web is not happenstance. Between weavings, Saraceno or a studio assistant rotates the frame to guide the shape of the final web.⁴⁵ Aesthetic judgement and an understanding of the weaving habits of various spider species guide the decision-making process of when to turn the frame and when to stop each spider from weaving.⁴⁶ Effectively, Saraceno aesthetically curates the production of the webs. The spiders become workers in his studio.

The web-spinning activities take place in the arachnid room, where up to three hundred spiders weave webs on the open frames.⁴⁷ In response to concerns that a spider room in an artist's studio could raise questions of animal welfare, Sasha Engelmann emphasises that there is reciprocity between the spiders and the studio members.⁴⁸ For Engelmann, the fact that the spiders spin their webs in an environment set up by humans is enough proof to establish that there is empathy and attunement between the spiders and their human handlers. Engelmann fundamentally conflates the spiders' instinctive and adaptive behaviours with a supposed response to the empathy of their human supervisors. The logic behind such combination appears to be that the spiders' willingness to weave constitutes a "multispecies collaboration" between spiders and humans and between different species of spiders. It is a kind of teamwork that, according to Engelmann, could not happen without empathy.⁴⁹

Engelmann's rationale is questionable because notions of empathy and collaboration presuppose voluntary participation, shared understanding and agreement on a common goal.⁵⁰ In the absence of any biosemiotic evidence that the spiders intentionally and consensually work with their human handlers, Engelmann's interpretation comes strictly from an anthropocentric standpoint. The spiders are bound to weave their web in a studio space that they were not active participants in choosing. Moreover, the human handlers decide when a spider stops weaving and the next one starts. Any notion of collaboration, let alone conscious consent, on the part of the spiders is doubtful. The term *collaboration* also implies equal relations of power between humans and spiders. This equality, under the conditions in Saraceno's studio, does not seem to exist. The displacement of hundreds of spiders from their natural environment and their confinement to a space where they can live and weave under

⁴⁵ Page, "Tomás Saraceno and the Ethics of the Sublime Anthropocene," 209.

⁴⁶ Page, 209.

⁴⁷ Engelmann, "Social Spiders and Hybrid Webs," 161–169.

⁴⁸ Sasha Engelmann, "The Cosmological Aesthetics of Tomás Saraceno's Atmospheric Experiments" (PhD thesis, University of Oxford, 2017), 168.

⁴⁹ Engelmann, 168.

⁵⁰ Federico Zuolo, "Cooperation with Animals? What Is and What Is Not," *Journal of Agricultural and Environmental Ethics* 33, no. 2 (2020): 315–335, <https://doi.org/10.1007/s10806-020-09826-z>.

the observation of humans to provide objects for an artist's practice can hardly qualify as a relationship on an even keel. Human handlers guide the aesthetic construction of the webs, which Saraceno appropriates and includes in works that are either exhibited, sold, or otherwise circulated. If anything, these circumstances highlight a situation of imparity as they raise questions about what constitutes an imposition of human will on the spiders, what constitutes a limitation of the spiders' autonomy, and what constitutes exploitation of animals.

Within environmental discourse, Saraceno's arachnid project is regarded as an important contribution because the structure of spider webs provides a metaphor for the interconnectedness and equal importance of all life.⁵¹ The connected filaments of a spider web radiate in all directions and intersect at connecting nodes. Bruno Latour writes that this visual configuration can be metaphorical of non-hierarchical relations within the earth's ecosystems, as power is not concentrated at the top and distributed downwards but distributed equally among all participants.⁵² These ideas are aesthetically expressed in the artwork *Galaxies Forming along Filaments, like Droplets along the Strands of a Spider's Web* (2009) (fig. 4.7). The installation features spheres of various sizes suspended in mid-air. The spheres are not solid; they are made of short elastic ropes connected to one another, forming a spherical shape. Longer elastic ropes then connect these spheres to each other. Both the longer strands and the strands within the sphere intersect and form intricate patterns evocative of a spider's web. The intersecting strands also evoke cosmic filaments – threads of dark matter that connect galaxies and bind the universe together – thereby linking the microscopic and the cosmic and highlighting the complex interdependence of all things.

The title – *Galaxies Forming along Filaments, like Droplets along the Strands of a Spider's Web* – is a metaphorical association between the fragile structure of a spider web and the structure of the cosmos, an idea that ultimately points to the interconnectedness of all life. Latour suggests that the compositional arrangement of Saraceno's spheres and filaments challenges the Renaissance order of the *scala naturae* or great chain of being, in which living creatures are arranged in a hierarchical order of importance, with human beings at the top. Instead, Saraceno's web is a heterarchy.⁵³ In the context of the climate crisis, Saraceno's philosophical proposition of non-hierarchical relations is relevant because it subverts

⁵¹ Angharad Closs Stephens and Vicki Squire, "Politics through a Web: Citizenship and Community Unbound," *Environment and Planning D: Society and Space* 30, no. 3 (2012): 551–567. <https://doi.org/10.1068/d8511>.

⁵² Bruno Latour, "Some Experiments in Art and Politics," in *Space Matters*, ed. Lukas Feireiss (Wien: Ambra Verlag, 2013), 86, <https://doi.org/10.1515/ambra.9783990435762.84>.

⁵³ Latour, 88.

anthropocentric views of human exceptionalism by acknowledging the value and agency of all life. It offers a conception of nature that can potentially reshape entrenched cultural practices that normalise the depredation of the planet for the benefit of humans.

Saraceno's vision of heterarchical coexistence through the metaphor of the spider web offers an ethical approach that is fundamental not only to environmental discourse but also to other types of political discourses. For example, the visual image of the nodes, the multidirectional tensors and the spaces between them, can be translated to a picture of how humanity could inhabit the globe as a social and political community that is not defined by territory, hence not bound and static. Rather, they are suggestive of the idea that the formation of the political subject is dynamic and can change at every meeting point.⁵⁴ Through this imaginative framework, the representation of the spider web offers a powerful metaphor of a humanity that is untethered from the identity politics of nationhood or citizenship. This concept, and probably many others, can fall within Saraceno's heterarchical paradigm of planetary life. What is incongruous, however, is that the installation conveying these powerful ideas should be inspired by the product of the labour of animals practically captive in the commercial setting of an artist studio.

The fact that the spiders in Saraceno's studio are well fed and treated with care does little to dispel the doubt that the spiders are, implicitly, regarded as property. As Gary Francione explains, it does not suffice to treat animals humanely during practices that use such animals for research. That merely amounts to "the right way of doing the wrong thing."⁵⁵ The use of animals for any research, whether it involves harmful practices or not, means to consider animals as property. This fact alone precludes any notion of equal relations of power, much less empathy. In Francione's view, a moral imperative to ensure the principle of equality of all life is to accord the animals the right not to be property.⁵⁶ In short, animals must be allowed to exercise their own agency. Viewed from Francione's perspective, Saraceno's use of live spiders for his research infringes the moral rights of animals not to be property, no matter how kindly such animals are treated, how useful the research is to humanity, or how incisive the study is to environmental discourse. This transgression severely undermines the environmental and sociopolitical importance of Saraceno's artworks.

⁵⁴ Closs Stephens and Squire, "Politics Through a Web," 551–567.

⁵⁵ Gary Francione, "Animal Advocacy and Effective Altruism: A Review of *The Good It Promises, The Harm It Does*," *Animal Rights: The Abolitionist Approach*, accessed October 10, 2024, <https://www.abolitionistapproach.com/animal-advocacy-and-effective-altruism-a-review-of-the-good-it-promises-the-harm-it-does/>.

⁵⁶ Francione, "Animal Advocacy and Effective Altruism."

Saraceno considers his own work with spiders as a foray into new understandings that can potentially help to find more sustainable modes of living.⁵⁷ A collaboration between the artist and researchers at the University of Darmstadt resulted in the invention of a new technique that enabled him to accomplish a three-dimensional scan of spider webs.⁵⁸ With the use of the scanning equipment, Saraceno translated the scan data of a Black Widow's web into a large-scale three dimensional artwork, *14 Billions (Working Title)* (2010) (fig. 4.8). The installation occupies a space of 400 cubic metres and uses 8,000 lengths of nylon rope connected by more than 23,000 individually tied knots.⁵⁹ The black elastic cords form a woven structure that is tight in some places and looser in others. Its complexity, intricacy, depth, dynamism and texture produce a material form that is reminiscent of a spider web. It also evokes visions of the woven fabric of the cosmic universe in which all life is immersed. As the visual form of a spider web becomes a visual proposition of the cosmos itself, it gives the viewer the illusion of being immersed inside the universe. From this perspective, *14 Billions (Working Title)* reflects its premise to create the illusion of a connection between the viewer and the natural world. The installation also reflects the promise of the technology from which it emerges. As Saraceno explains, the scanning apparatus can help to understand the material properties of complex spider webs. Such knowledge of natural systems and biological materials could be applied more broadly, with the potential to reduce environmental impact.⁶⁰ While the implications at stake are significant, the knowledge fails to address not only the anthropocentric views that underpin the climate crisis, but also its cultural and societal drivers, including patterns of consumption and economic priorities.

According to Saraceno, his technology for three-dimensional spider web scanning potentially opens a path into biomimicry and biomaterialomics – the holistic study and application of biological systems to develop materials in ways that mirror nature's non-polluting processes.⁶¹ While this exploration is promising, the notion that more sustainable materials should emerge through research that involves the labour of animals remains aligned with the same extractive and instrumentalising mindset that underpins ecological destruction. From this perspective, Saraceno's practice reflects the broader problem that genuine

⁵⁷ "MIT: Laboratory for Atomistic and Molecular Mechanics and Cast," Arachnophilia, accessed October 8, 2024, <https://arachnophilia.net/applications/>.

⁵⁸ "MIT: Laboratory for Atomistic and Molecular Mechanics and Cast."

⁵⁹ "14 Billions (Working Title)," Studio Tomás Saraceno, accessed October 8, 2024, <https://studiotomassaraceno.org/14-billions-working-title/>.

⁶⁰ "MIT: Laboratory for Atomistic and Molecular Mechanics and Cast."

⁶¹ "MIT: Laboratory for Atomistic and Molecular Mechanics and Cast."

transformation in response to the climate crisis cannot begin without a shift in the cultural values and dominant worldviews that shape humanity's relationship with nature. Without such a change, the underlying logic of exploitation that drives the environmental emergency is unlikely to be meaningfully disrupted.

Saraceno's collaboration with science to find new restorative approaches to climate change cannot possibly justify the use of animals. Similarly to Gary Francione, Donna Haraway writes that the mere attempt to minimise cruelty is simply not enough to prevent the objectification and instrumentalisation of animals.⁶² Animals find themselves the objects of research not out of their own free choice, and relations in such a situation can never be equal.⁶³ Haraway's proposition refers to laboratory experiments in which pain and death of animals are often the result; this is very different from the circumstances that surround the spiders in Saraceno's studio, which are not subject to practices that inflict pain and death. Nevertheless, Haraway's observations provide a useful framework to ethically assess other types of research that involve the use of animals. While Haraway does not advocate to end the use of non-human beings for research because some of it has been of pivotal benefit to humanity, she cautions that the exercise of responsibility on the part of humans is a must. From Haraway's perspective, responsibility in research means to make sure that the research is very consequential.⁶⁴ In short, the end must justify the means. Based on the notions of heterarchical interconnectedness that ultimately underlies Saraceno's spider webs project, there could only be one justification for the use of spiders to produce commercial artworks and other forms of knowledge. The research would have to generate benefit for all parties involved in the project. The question, then, is do the spiders draw any benefit from Saraceno's research?

Lara Almarçegui

Lara Almarçegui acquires the licence, in various European countries, to explore and mine minerals that are used to manufacture building materials.⁶⁵ These licences are part of her *Mineral Rights* project (2015–ongoing) (fig. 4.9), a critique of the capitalist systems of

⁶² Donna Haraway, "Sharing Suffering: Instrumental Relations Between Laboratory Animals and Their People," in *When Species Meet* (Minneapolis: University of Minnesota Press, 2007), 71–72, <https://ebookcentral.proquest.com/lib/usyd/detail.action?pq-origsite=primo&docID=328400>.

⁶³ Haraway, 71–74.

⁶⁴ Haraway, 71–74.

⁶⁵ Helene Romakin, "Extremely Unagitated – A Closer Look at the Artistic Practice of Lara Almarçegui," *On Curating* 50 (2021): 76–88, <https://www.on-curating.org/issue-50-reader/extremely-unagitated-a-closer-look-at-the-artistic-practice-of-lara-almarcegui.html>.

ownership. This ongoing work, which began with the procurement of mineral rights for an iron deposit in Tveitvengen, Norway, shines a light on the background legal processes that sanction the exploitation of nature for the sake of urban expansion.⁶⁶ Although some of the licences that Almarçegui obtains allow the holder of the permit to claim resources all the way to the centre of the earth, the artist limits her activities to the exploration stage.⁶⁷ The choice not to carry out the extraction activities potentially permitted by the licence is central to the work. Mineral rights are discursive of the legal, economic and political frameworks that regulate who controls the land and its resources. The refusal to mine negates the idea of lawful consent to plunder and destroy nature for profit. In effect, Almarçegui uses the very tools of the capitalist system to highlight the system's ethical and ecological failings.

Through such a lens, *Mineral Rights* appears to be a critical engagement with the structural mechanisms of environmental commodification. It is nevertheless problematic to regard this work as a form of political resistance because the purchase of exploration and mining licences is an active participation in the very systems of ownership that the work purports to expose and critique. *Mineral Rights* falls short of functioning as an activist project capable of catalysing structural change because it affirms the existing systems that administer and consent the plundering of nature.

The exhibition *Agras Vulcano Mineral Rights* (2019) (fig. 4.10) includes a room entirely filled with 40 tonnes of pozzolanic ash, also known as raw pozzolan. The very narrow space between the pile of materials and the surrounding walls allows only one visitor at a time to walk through. The tightness of the gap creates a sense of physical constraint that heightens the viewer's awareness of the material's mass and presence.⁶⁸ The decision to use raw pozzolan as an artistic medium stems from a geological exploration conducted by Lara Almarçegui in collaboration with a geologist, in the region surrounding the exhibition site in Valencia. Mineral exploration involves a series of geological surveys conducted to evaluate the presence, distribution and potential value of underground mineral deposits. This process is often a precursor to initiating the legal processes required for claiming and extracting those resources.⁶⁹ For *Agras Vulcano Mineral Rights*, Almarçegui prospected for raw pozzolan – a

⁶⁶ Lara Almarçegui, "Mineral Rights," *MaHKUscript: Journal of Fine Art Research* 1, no.2 (2016): 1–4, <https://doi.org/10.5334/mjfar.16>.

⁶⁷ Almarçegui, 1–4.

⁶⁸ Romakin, "Extremely Unagitated," 76–88.

⁶⁹ N. C. White, "Mining Geology | Exploration," in *Encyclopedia of Geology*, ed. Richard C. Selley, L. Robin, M. Cocks and Ian R. Plimer (Oxford: Elsevier, 2005), 613–623, <https://doi.org/10.1016/B0-12-369396-9/00239-2>.

resource used to produce concrete – within an area of about 3,200 hectares at the Agras Volcano, which had been an active mine for many years.⁷⁰ The research was made possible thanks to a one-year exploration licence that the artist purchased from the Spanish authorities. A copy of the licence is included in the exhibition, together with visual and textual documentation of the surface of the volcano and explanations about Spanish mining laws.

The installation prompts the consideration of the legal, political, economic and ecological ramifications of mineral extraction in connection to the construction industry. In other words, *Agras Vulcano Mineral Rights* can be understood as a call for new formulations of sustainability that would necessarily take urbanisation into account. However, the incongruities that besiege the work distance it from the notion of being a political act because Almarçegui bought the ash for *Agras Vulcano Mineral Rights* from an active mine three hundred kilometres away. The extraction of pozzolanic ash at the Agras Volcano site had in fact ceased in the 1980s, and the mine is no longer operational. The purchase of the volcanic resource therefore constitutes an active engagement in the processes of extraction and trade that cause the plundering of nature and contribute to global warming. This inconsistency significantly undermines the political weight of Almarçegui's installation insofar as the work exists in virtue of the very processes on which it points its critical spotlight. It is also the case that the acquisition of materials from another site renders the Agras mine no longer the subject of the work. Helene Romakin emphasises that the inclusion of a copy of the exploration licence in the exhibition takes the artwork beyond the realm of representation and renders it a “legal reality.”⁷¹ However, the fact that the exhibited material comes from somewhere else indeed reduces the Agras mine to a mere representation and distances the viewer from the issues that the work underscores.

At the 2013 Venice Biennale, Almarçegui also exhibited mounds of rubble, together with a list of the materials' names and quantities. The inventory in *Untitled – Material Construction of the Spanish Pavilion* (2013) (fig. 4.11) identifies the resources as being equal to those used in the construction of the pavilion in which the artwork is installed.⁷² In doing so, the work draws attention to the material composition of architecture itself. In a similar vein to *Agras Vulcano Mineral Rights*, the installation provides an implicit commentary on

⁷⁰ Romakin, “Extremely Unagitated,” 76–88.

⁷¹ Romakin, “Extremely Unagitated,” 76–88.

⁷² Octavio Zaya, “Digging My Way Out to Possibility,” in *Lara Almarçegui: Pabellón Español, 55^{CE} Exposición Internacional de Arte = Spanish Pavilion, 55th International Art Exhibition: La Biennale di Venezia* (Madrid: Turner, 2013), 17.

the imperative to include urban development in the environmental sustainability discourse. However, the emphasis on the material composition of the biennale pavilion gives the installation a narrow focus that fails to address the broader ecological and political implications of the construction industry. Urban expansion contributes significantly to environmental degradation not only through local building practices but also through complex transnational processes governed by global capitalism. These processes often remain opaque, as materials are extracted, processed and assembled across national borders in ways that exploit both natural resources and human labour, particularly in the Global South. The installation does not make these systemic dynamics visible nor does it connect the materials on display to the extractive systems that underpin them. In the context of environmental sustainability and justice, the implications of these global systems are too enormous to be ignored.

Urbanisation is not just an environment problem; it is also a social issue. As cities expand, poorer populations are inevitably displaced to the urban periphery where housing is cheaper but the infrastructure is inadequate, with limited access to transportation, healthcare, education and other essential services. In failing to articulate the connection between construction, capitalism and social dispossession, *Untitled – Material Construction of the Spanish Pavilion* misses an opportunity to expose how urban development is not only an ecological issue but a deeply sociopolitical one too. As T. J. Demos writes, issues of environmental sustainability cannot be detached from other power struggles that relate to gender, ethnicity and class.⁷³ While *Untitled – Material Construction of the Spanish Pavilion* offers a gesture toward politicising the materiality of architecture, the critique it presents is ultimately insufficient. Its limited scope diminishes the political strength of the work, reducing what could be a powerful confrontation with the politics of space, extraction and inequality into a primarily formal inquiry into matter.

Almarçegui's practise operates within a conceptual framework that also highlights the environmental implications of waste from urban structures. Some of her artworks emphasise how the extraction of construction minerals, such as sand and iron, is not obvious until these resources, in their processed form, become obsolescent. As Octavio Zaya writes, the extraction of resources to build architectural edifices, and the disposal of these materials when urban structures reach the end of their life cycle, are some of the overlooked ecological

⁷³ T. J. Demos, "The Politics of Sustainability: Contemporary Art and Ecology," in *Radical Nature: Art and Architecture for a Changing Planet 1969–2009* (London: Barbican Art Gallery, 2009), 16–30, <https://www.environmentandsociety.org/mml/politics-sustainability-contemporary-art-and-ecology>.

factors that Almarçegui's work brings to the attention of the viewer.⁷⁴ Insofar as the debris in *Untitled – Material Construction of the Spanish Pavilion* is recovered from various demolition sites, the work raises important questions about the fate of architectural materials when they become waste. Similarly, Cuauhtémoc Medina delves into a deeper analysis of Almarçegui's biennale work and suggests a critique that points to the broader issue that is the connection between capital, consumption and urbanisation. As Medina argues, the expansion of urban space is fundamental to capital's imperative to absorb production surpluses, meaning that capitalism constantly produces more goods and value than it can immediately sell or use. Therefore, the system needs ways to use up this excess, otherwise the economy stalls. Urban development becomes one such outlet. By constantly building new developments, encouraging consumption and fuelling it all with credit, the economic system sustains itself even if it is environmentally or socially unsustainable.⁷⁵ One only needs to think of the mega shopping centres, the ubiquitous motorways, or the expansion of residential developments that continues to push beyond the boundaries of the city in order to grasp the extent to which urban spaces have become centres of economic stimulus regardless of the ecological implications. *Untitled – Material Construction of the Spanish Pavilion* infers that obsolescence is but a symptom of much larger underlying issues, as the upgrade of existing urban dwellings and infrastructure means injections of capital, hence economic growth and profit.

While Zaya's and Medina's ideas are unarguably valid, *Untitled – Material Construction of the Spanish Pavilion*'s explicit reference to the architectural premises of the biennale introduces a degree of ambiguity. By situating its critique within the very structure it deconstructs, the installation opens itself to a more limited or even inward-looking interpretation that may diverge from the broader economic and geopolitical critique articulated by both Zaya and Medina. The exhibition of the same construction materials that constitute the very pavilion that the work temporarily inhabits raises questions about the environmental costs embedded in the making of art spaces themselves. The Venice Biennale is part of a global art market that, with its globally ubiquitous biennales, is responsible for a cultural consumption that contributes enormously to the global emissions. There is no doubt that the economic profit generated by such art events materialises at the expense of the

⁷⁴ Zaya, 17–18.

⁷⁵ Cuauhtémoc Medina, "Material Meditation," in *Lara Almarçegui: Pabellón Español, 55th Exposición Internacional de Arte = Spanish Pavilion, 55th International Art Exhibition: La Biennale di Venezia* (Madrid: Turner, 2013), 37.

environment. The transport of artworks, the construction and disposal of temporary installations, the electricity to illuminate exhibition premises, the travelling of involved parties and visitors, to mention but a few factors, all produce a substantial ecological footprint. With its presence at the biennale, Almarçegui's work becomes embedded in an institution that, like other cultural institutions, contributes to many of the environmental problems that her artwork critiques. Moreover, insofar as biennales attract visitors and generate significant revenue for the cities that host them, they, too, become a site for the capitalist production of surplus value and contribute to the formation of the consuming subject.

As *Untitled – Material Construction of the Spanish Pavilion* unwittingly compounds the complex urbanisation issues that it raises, it is emblematic of the inescapable difficulties that artists encounter in the attempt to create an artwork that can embody a cathartic message of environmental sustainability. Most importantly, despite the significance of its political message, *Untitled – Material Construction of the Spanish Pavilion* embodies a fundamental problem that undermines its effectiveness as a form of environmental activism, a problem that it shares with all the artworks analysed in this chapter. Rather than disrupting structures of power, it ultimately affirms them.

Environmental art undeniably plays an important part in the understanding of ecological problems and can certainly contribute to cultural movements. However, its relationship with political activism is fraught with problems. Most works remain trapped in an ambiguous space situated amid critique, complacency, spectacularity and contradiction. While this ambiguity offers a point of reflection about the very complexities that underlie the climate crisis itself, it dilutes art's capacity to instigate direct political action. The analysed works offer powerful visual and conceptual representations of environmental issues but do not necessarily catalyse concrete change. Overall, they fail to challenge the existing power structures that perpetuate environmental despoliation.

If such an assertion stirs a perception of harshness, it might help to ponder the fact that, without scrutiny, the triumphalist lens through which environmental art is often portrayed threatens to turn what is in effect a problem of survival into an issue that can be normalised, romanticised, spectacularised, trivialised or even exploited. At the risk of belabouring the point, it is also important to ponder that for an artwork to spark political action, it must offer more than just moments of reflection and awareness. The work must go beyond a superficial engagement and account for the political systems at play, as well as the social processes of the time. Practical change comes about through assiduous advocacy and

petitioning with legislators, through deep shifts in public opinion, through a change in the cultural mindsets that inform and normalise the despoliation of nature, through grassroots mobilisation that leads to collective action, through disruptive protests that call immediate attention to the problem, and possibly more. In short, for art to catalyse action it must navigate the innumerable intricacies and complexities of political engagement. However, this is not possible due to the intractable conflict between the aesthetic form and the urgent message for actionable change. For environmental art to alter the trajectory of global warming, it must compel viewers to take part in the urgent political action it seeks to catalyse, at which point it is no longer art but political activism.

5. STUDIO WORK

When people ask about my art practice, I often hesitate to discuss the sociopolitical motivations that drive it. There comes a point when one must acknowledge that art, however sincere, is unlikely to change the world. However, a reassessment of the artistic and academic path that led me here indicates otherwise. This PhD project began with the firm conviction that working with salvaged materials would make a meaningful contribution to environmental discourse. That belief has not disappeared. However, as a result of the PhD research, a more tempered understanding has emerged, one shaped by the melancholic recognition that despite the best intentions, the impact of environmental art can be reduced or distorted. The making of the work now takes place with a clear-eyed understanding that every artwork carries inherent contradictions, and that resolving one paradox often gives rise to another. However, art has never solved problems in a measurable, utilitarian sense. Instead, art reflects the same tensions, limitations and impasses that define the realities it seeks to confront. In this regard, these artworks suggest the more unsettling idea that within the all-consuming logic of capitalism, a solution to the climate crisis might be out of reach. Even so, such recognition does not bring the work to a standstill. Despite the paradoxes, it is necessary to continue making art, if only to prevent the hopelessness of inertia. Even if the conclusion is that genuine environmental sustainability is incompatible with our current economic structures, continuing to make art affirms a stance of awareness and commitment, which is in itself an act of resistance.

The bodies of work examined in the discussion that follows are all made from salvaged resources. The artistic engagement with recovered materials reveals the extent to which the ecological crisis is not an isolated issue but a direct consequence of global capitalism's extractive and disposable logic.¹ Waste is often seen as the aftermath of consumption – piles in landfills and leaking toxins that threaten biodiversity and nudge the planet closer to

¹ Amanda Boetzkes, *Plastic Capitalism: Contemporary Art and the Drive to Waste* (Cambridge, MA: MIT Press, 2019), 31.

collapse. However, this view is narrow. Waste is also the invisible by-product of capitalism's insatiable pursuit of growth, including the industrial emissions from factories, the carbon emissions from burning fossil fuels, and the effluent coursing through rivers. In short, waste is all the pollutants that saturate water, air and soil. This means that waste is not just a symptom but a structural output of an economic system that externalises harm as a matter of course.

Such reflections sharpen the realisation that waste lies at the heart of the climate crisis, though it is rarely, if ever, acknowledged as such in mainstream discourse. To confront the waste problem directly would imply challenging the very foundations of the economic system: growth, accumulation, endless consumption and the unrelenting appetite for energy. The scale of this shift is unimaginable, which is perhaps why waste is often ignored. Given this context, the works interrogate how consumer waste operates not in isolation but as a symptom of broader structural forces. They attempt to trace the entanglements of discarded materials across social, political, economic and environmental domains. Each body of work engages with the idea that waste is not simply an end product but an active agent within systems of power and disposability. This evaluation considers both where the works successfully articulate their concerns and where they encounter impasses that undermine their political force.

It's a Circus Out There (2021)

This body of work consists of recovered cardboard packaging. It expresses ideas that pivot around the commodification of consumer waste. Waste is discarded because it has no value, yet its existence as a surplus generates economic value within world markets. Due to a global inadequacy of recycling infrastructure, waste is a tradeable commodity.² Given that waste is a by-product of production and consumption and a tradeable product in its own right, it becomes both symptomatic and constitutive of the world economy, for waste is an integral part of global capital.³ Seen this way, the act of salvaging material becomes a way to challenge the norms of commodification and private ownership that drive capitalist systems, as resources are obtained without payment. The reclamation of discarded resources outside of

² Nicky Gregson et al., "From Waste to Resource: The Trade in Wastes and Global Recycling Economies," *Annual Review of Environment and Resources* 40, no. 1 (2015): 151–176, <https://doi.org/10.1146/annurev-environ-102014-021105>.

³ Boetzkes, *Plastic Capitalism*, 131.

formal systems of economic exchange aims to unsettle deeply rooted assumptions about structural legitimacy, value and access.

The cardboard elements in *Postnormal Economic Deficit Disorder* (fig. 5.1) are assembled into complex configurations that evoke architectural structures and urban layouts. The intricate layering, textures and glossy saturated tones contrast with the unpainted, decrepit cardboard underneath. Like the other works in this series, *Postnormal Economic Deficit Disorder* is both visually appealing and unsettling to provoke reflection on the ideas of dysfunction and degradation. The three-dimensional constructions rest on a foundation of salvaged packaging boxes that have been cut, flattened and glued together in layers. The rough, torn edges of the base are left in their damaged state on purpose as they hint at a larger sense of collapse. The damage reflects the slow unravelling of systems that once held communities together – things like public services, labour conditions and care for the environment. The visual language of the eroded borders reiterates the notion of a society frayed at the seams, where social, economic and environmental systems are worn thin under the constant strain of capitalism's unrestrained pursuit of profit. The unpainted cardboard base bears the signs of its commercial origins: brands, logos, measurements, barcodes and manufacturing locations.

In works such as *Handle with Care* (fig. 5.2), the remnants of packaging tape remain adhered to the cardboard surface, and staples are still embedded within it. The visibility of these elements is not happenstance but underscores the material's embeddedness in global systems of production, circulation and consumption. A similar idea is also conveyed in *A Dummies' Guide on How to Eat Raw Onions in Public* (fig. 5.3), although it is expressed through different visual cues. In this work, brands such as Osmocote, Duracell and Valvoline, alongside an Express Post label, some barcodes, and a hastily written warning scribbled by hand – “Use by 08” – are patently visible. These seemingly banal fragments not only point to the material's commercial origin but also invite other interpretations related to consumer culture, branding and the packaging of identity.

The intention behind the conspicuousness of these elements is to expand the reading of the work beyond the idea of structural systems so that it can also encourage reflection on how value, identity and meaning can be shaped through everyday commodities. The core idea is that brands do more than just label products. Through marketing and circulation, they shape how people see themselves, what they want and how they relate to others. The transformation of discarded cardboard into art proposes to challenge these assumptions of value, as the waste material accrues a new symbolic and monetary value through its

reclassification as art. *A Dummies' Guide on How to Eat Raw Onions in Public* highlights, in a tongue-in-cheek way, the fiction at the core of value itself. The work mobilises the concept that what is deemed worthless can be elevated again by its new and appealing visual form. This revaluation occurs through the object's recontextualisation within cultural systems bound by constructed notions of legitimacy, such as market trends, the artist's reputation and institutional endorsement.

The colours of the assemblages in *A Dummies' Guide on How to Eat Raw Onions in Public* deliberately reject the subdued palettes of suburban domesticity. The harsh tones suggest a sense of discomfort as they prompt associations with chemical toxicity and hazardous substances. The neon shades, in particular, evoke the chemical and industrial effluents that ensue from the industrial production of everyday goods. These pollutants are rendered invisible by systems that prioritise convenience and aesthetic appeal over environmental toll.

This attempt to create meaning through colour generates completely different connotations in *Entlemen Ection* (fig. 5.4). The intended colour was a muddy mustard yellow, referencing atmospheric toxicity, such as the jaundiced glow of the polluted sunsets or the chemical haze in the air that surrounds industrial areas. However, the enamel paint reacted with the sealant on the substrate and produced an unexpected clarity and vibrancy that potentially opens the artwork to unintentional interpretations. Rather than suggesting decay, the bright yellow takes on the upbeat, cheerful tones often found in commercial advertising, where bright colours evoke enjoyment and positivity. Although the outcome is due to an unforeseen effect of the process, it nonetheless provides food for thought about how meaning in art can shift beyond the artist's intentions. Even when it aims to critique systems of excess and harm, the work can inadvertently reproduce the visual language of the very forces it seeks to question. This tension serves as a reminder to remain vigilant for such slippages – something that is paid closer attention in the development of the next studio project.

Click Here to Reset Your Password (2023)

This text does not provide an extended explanation of the work, as the project focuses on a single idea that forms its foundation. The inspiration stems from the theoretical research in Chapter 2, which explores the rhetoric that surrounds environmental sustainability and lays the groundwork for studio ideas that develop more fully in the next body of work. Although limited in scope, this work is important because it marks the point at which the central concept begins to take shape. The question at stake is whether individual choices can

effectively contribute to the reduction of environmental impact when larger systems and structures influence such decisions. This doubt is conveyed through the frame motif, which acts as a structure that governs what is obscured, what is seen, and how it is seen. The notion of agency is an illusion because real change demands structural transformation. The need for such transformation became clear in *It's a Circus Out There*, where the recovery of waste for art-making was intended to challenge capitalist notions of private ownership. However, it became apparent that the resultant artwork neutralises this challenge because it is absorbed into the exchange economy like any other commodity. The works in *Click Here to Reset Your Password* acknowledge this structural contradiction and turn it into a central critique. The metaphor of the frame is intended as a tool to visualise this paradox, as it frames commodification not as a failure to avoid, as the previous work does, but as a structural precondition to confront.

The frame of *Vitalize Green Dunamis* (fig. 5.5) is constructed from salvaged wood. The timber lengths used to be door jambs, architraves and other structural elements of houses that are now demolished. As the recovered parts are pierced with nails and riddled with holes and other damage, they yield irregular offcuts when the marred sections are cut away. Although the first impulse is to discard these scraps, doing so would mirror the same disposability mindset that underpins the capitalist economy. Instead, they are cleaned up and seamlessly integrated into the frame as parts that hold meaning both physically and symbolically. The pieces reiterate how dysfunction is not an external problem but a structural feature. These damaged parts are the metaphorical embodiment of the inherent problems in our political, economic and cultural systems. Through this lens, the frame is intended to function as a materialised critique of the very conditions it seeks to address. However, the integrated faulty pieces of timber give rise to an asymmetrical form that is unexpectedly playful. Combined with the bright colours, the final work evokes the aesthetic allure that defines consumer culture, exposing a tension between visual seduction and the work's ability to critique. In this sense, *Vitalize Green Dunamis* does not present a resolved position. Instead, it provides an important point of consideration moving forward.

Vitalize Green Dunamis embodies the concept that specific dynamics shape our perception and understanding of the world. The way in which the arrangements of the reused cardboard are carefully orchestrated within the frame expresses how the story of recycling is framed as a solution to the problem of waste. In the material world, recycling is often presented as a complete and effortless answer to the environmental problem of waste. In reality, though, it masks the much larger issues that cause waste in the first place, such as

overproduction, overconsumption and a lack of corporate responsibility. The frame functions as a metaphor for these limitations as it draws attention to how dominant power structures create boundaries that limit or distort our perception, making superficial solutions appear sufficient while concealing the necessity of structural change. Through this lens, the work prompts viewers to question whether practices labelled as “sustainable” genuinely address environmental accountability or merely perpetuate the conditions that cause the problem in the first instance.

The title *Vitalize Green Dunamis* fuses the colour names of the commercial house paints with which the frame is painted. The emphasis on the commercial information about the paint redirects the focus from the visual, emotional or symbolic qualities of the colours to the production systems behind them. The decision to incorporate the names of mass-market hues alludes to the entanglement between artistic production and consumer culture. The commercial names of the paints – *Vitalize Green Dunamis* – suggest how meaning is shaped not only by what is seen but also by the hidden systems behind what is seen, systems that include advertising, branding and marketing. The title itself – *Vitalize Green Dunamis* – effectively translates as “enliven green power,” a phrase that emphasises the cultural and political weight of “greenness” and highlights how language participates in shaping the ideological meanings attributed to colour. Within this context, the work serves as an opportunity to reflect on how cultural production, including political art, remains entangled within the very political, cultural and commercial frameworks it often seeks to oppose.

Il Pretesto (2024)

The artworks in *Il Pretesto* are assemblages composed of discarded objects generally found in suburban wheelie bins, including polystyrene packaging, food containers, garden hose fragments, taps, sticky tape dispensers and other domestic detritus. These remnants are reconfigured into abstract constructions and coated in brightly coloured paper pulp. They produce forms that evoke obsolete machines, mechanistic objects, speculative technologies, crumbling infrastructures and post-industrial relics. These associations are deliberate as the works draw from a visit to White Bay Power Station, a former coal-fired power station in the Sydney suburb of Rozelle, which was decommissioned in 1984 and reopened in 2024 as a cultural venue after extensive remediation. This process, which included the restoration of its original, mid-century machinery, serves as both inspiration and critical foil, as it provides a reminder of how heritage and aesthetic appeal can obscure the material legacies of energy

production and environmental impact.⁴ The refurbishment aestheticises the machinery to the point that it rivals the curated artworks within the venue. Through cleaning and restoration, the industrial equipment is transformed, and its forms, contours and textures are revived. Some surfaces are coated in metallic purples, bright reds, greens and glossy blacks. This makeover lends the machines a seductive industrial beauty that conceals their polluting history and recontextualises them as cultural objects. Such recontextualisation provides both the conceptual foundation and the visual reference for the mechanistic forms in this body of work.

The title, *Il Pretesto*, Italian for “the pretext,” is integral to the meaning of the work. Etymologically derived from the Latin *praetextum*, “disguise,” the title suggests ideas of deception through distraction. These ideas are a pointed allusion to the rebranding of White Bay’s defunct coal machinery as cultural heritage insofar as their readaptation risks masking the continued reality of fossil fuel dependency. Framed as a “monument to the absurd effort” to power colonial expansion, the repurposing of the site flirts with a triumphalist narrative that sanitises the industrial past while ignoring present iterations.⁵ The title invites viewers to consider the surface not as a neutral element, but as a strategic veneer that deflects attention from larger problems. This logic of concealment extends to the artworks themselves, where vibrant paper pulp conceals layers of salvaged waste identical to the discards that continue to accumulate and contaminate landfills worldwide.

In *Recovered Grocery Cardboard Box, Polystyrene Packaging, and More* (fig. 5.6), broken wall hooks, taps and broken PVC pipes are assembled into a compact structure sealed through successive layers of glue, tape, plaster and resin.⁶ The final application of paper pulp encases the components in a visibly unified surface. The pulp-making process involves shredded documents and house paints. While the decision to recover the paper from a migrant welfare office initially arose as a pragmatic response to the availability of material, the personal data on the documents introduces meanings that only emerge upon reflection. The paperwork gestures towards broader systems of bureaucratic control and the commodification of identity. Whether this political subtext is legible in the final work is doubtful, given that

⁴ “White Bay Power Station,” Ten Thousand Suns, Biennale of Sydney, accessed September 28, 2024, <https://www.biennaleofsydney.art/white-bay-power-station/>.

⁵ Cosmin Costinaş and Inti Guerrero, curatorial statement, *Ten Thousand Suns*, wall text at White Bay Power Station, 24th Biennale of Sydney, 2024.

⁶ The title in its entirety is *Recovered Polystyrene Packaging, Duly Purchased Hanging Bracket, PVC Pipes, Resin, Binding Agents, Fungicides – all Meticulously and Sustainably Covered in Paper Pulp and Red House Paints*.

the information vanishes in the pulp. However, the process invites reflection on how people, materials and systems of power are entangled within an economic order in which everything is reduced to a tool for profit.

This concern with how everything is instrumentalised for revenue also informs the decision to use discards such as polystyrene and PVC, which can be recycled but economic and environmental constraints render their recycling challenging. As such, they usually end up in landfills. These materials highlight the absurdity of manufacturing products designed to outlive their usefulness but remain too hazardous or costly to reclaim. In everyday life, this contradiction is concealed, because this reality is obscured through the reassuring rhetoric of recycling. By incorporating these discards into its structure, the work disrupts this concealment and compels the viewer to confront the persistence of waste – a persistence that consumer society would rather ignore. This act of visibility exemplifies Jacques Rancière's notion of redistribution – a reconfiguration of what is perceptible and, therefore, open to political attention.

Such focus on concerns of visibility and exclusion began in the previous body of work – *Click Here to Reset Your Password* – and continues in *Il Pretesto*, where the logic of concealment and exposure is central. In *Recovered Chair Parts, Post Office Boxes, Salvaged Polystyrene Packaging and More* (fig. 5.7), the garden tap and chair legs are immediately recognisable, while other components remain hidden in the paper pulp.⁷ This selective exposure reiterates how the politics of visibility shape perception and meaning; in material terms, consumer waste is swiftly collected through institutional processes and removed from public view, enabling its systemic disavowal. On reflection, though, it could also be argued that by partially covering the discarded materials, the artwork reproduces this logic of concealment even as it disrupts it. In effect, only the title of the artwork explicitly reveals all of the hidden discards within the object. While this ambivalence offers future points for reflection, it also reveals the complexity of critically engaging with waste, as attempts to expose what is systematically obscured must also reckon with the risk of reinscribing the very erasures that the work seeks to contest.

Each body of work opens up new insights into how materials create meaning and how the sociopolitical conditions from which the artwork emerges shape such meaning. The creation of artworks with recycled resources presents an opportunity to challenge established

⁷ The title in its entirety is *Recovered Chair Parts, Post Office Boxes, Salvaged Polystyrene Packaging, Appropriated Tap, PVC Pipes, Bunnings Plastic-Coated Hanging Hook, Resin, Binding Agents, Fungicides – all Meticulously and Sustainably Covered in Paper Pulp and Pink House Paints*.

ideas about sustainability. What gradually emerges is a complex picture. While some critical intentions are evident, others encounter contradictions that are not easily resolved. From the position of an artist, each limitation becomes the premise of the next artwork – an ongoing negotiation with the problems of form, content and interpretation. The recurring challenge lies in how to address the structural conditions of environmental degradation and overconsumption, as these issues are deeply embedded in the systems within which art is produced, circulated, valued and interpreted. As a result, art must constantly deal with the risk of reinforcing the logic it seeks to critique. Rather than disavow such tensions, this project treats them as necessary points of reflection. The aim is not to present environmental art as a solution but to examine its limits and complexities. Any meaningful engagement with environmental sustainability must begin with a critical understanding of the frameworks within which cultural production takes place and the limitations that such frameworks impose.

The studio component of this project included additional artworks – public commissions – that contributed to further explore the tensions that arise from these limitations, though a discussion of such works is not incorporated in this project due to scope. The making of these artworks provided further valuable insight into the practical and material realities of creative production in relation to environmental art. The creation of large-scale public artworks often demands substantial resources. While the works may successfully incorporate recovered materials, they may still necessitate the use of other resources that require extractive and energy-intensive manufacturing processes. Moreover, the production and installation of these works can also involve logistical support, including cranes, lifts, scaffolding and trucks for transport and installation, all of which consume energy and resources, even when the works aim to emphasise environmentally conscious principles. These experiences illustrated how the structural constraints of production – shaped by industrial processes, economic imperatives and material demands – can unavoidably limit the extent to which environmental ideas can be fully realised, both in art and in the world at large. Such insights further informed the project's exploration of how creative practice intersects with environmental and systemic issues, demonstrating that even environmentally motivated artworks operate within broader frameworks that shape and circumscribe sustainability outcomes.

CONCLUSION

This discussion reveals that environmental art does not exist in isolation. It is influenced by deeply ingrained perceptions of nature and sustainability. Such perceptions are far from neutral, as they are shaped over time by social, historical and economic forces that reflect prevailing power structures. In other words, the way nature and sustainability are understood in the material world, and consequently represented in art, is often aligned with interests that uphold existing inequalities, promote specific agendas, normalise exploitation, and fundamentally cause the very problems that environmental art seeks to address.

As a result, what emerges from this analysis is a broader reckoning with how ecological responsibility is co-opted by the very systems it purports to challenge, both through art and activism. The narratives that circulate through media, culture and politics suggest that sustainability is a matter of ethical consumption and that it is achievable within neoliberal frameworks. This belief is strategically cultivated. Sustainability is framed not as a political or structural imperative but as a marketing strategy, a lifestyle accessory, a moral performance. Sustainability discourse remains symbolic, mainly anchored in myths of purity, naturalness and individual virtue, because the deeper structures in which sustainability must be achieved remain critically unexamined. Given that the cultural lens that frames sustainability is the same lens that shapes its artistic articulation, environmental art ultimately risks reinforcing the very systems it seeks to critique.

The study also highlights that environmental art circulates within institutional and commercial frameworks, such as museums, galleries and art markets, which operate within the same neoliberal economic context that prioritises profit and drives the climate crisis. Consequently, these institutions often follow the same economic logic. They emphasise marketability, visibility and audience appeal within dominant cultural frameworks, all of which can diminish art's critical force and turn the artwork into a commodity or branding tool.

This tension between art's critical intent and market forces was blatantly manifest during a visit to the 2024 Biennale of Sydney. I was struck by how closely the curatorial statement (fig. 6.1) at the entrance of the venue reflects many of environmental art's contradictions at the core of this research. The statement presents White Bay – a former coal-fired power station – as a space of cultural renewal. It also frames the site as a symbol of historical reckoning and environmental awareness, with reference to the absurdity of colonial

energy systems. Despite these acknowledgements, the explanation ultimately ignores the material realities underpinning the readaptation of the site: the environmental costs of remediation, the energy required to stage large-scale exhibitions, and the strategic deployment of environmental discourse as a tool for institutional branding. From this viewpoint, the notion of sustainability becomes a marketing exercise rather than a practice grounded in accountability and systemic change. Such disjunction between the narrative of transformation and the realities it conceals did not undermine the work on display, but it does highlight the contradictions that continue to undermine the critical force not just of environmental art, but of political art in general. White Bay exemplifies the tensions between the political aspirations of environmental art and the institutional, economic and discursive systems that support it.

The Biennale's title, *Ten Thousand Suns*, together with the curatorial statement, foregrounds the exhibition's uplifting tones with symbolic language such as "sunlight," "radiance," "resistance" and "joy." The poetry is striking, yet it is also pointedly ironic that a site once devoted to burning coal is given a glowing redemption with the language of light. This symbolic recasting of extraction and trauma as radiance is precisely the type of gesture that this research has taken years to scrutinise. Such a rhetorical move wraps ecological, colonial and historical harm in the narrative of light, hope and rebirth, even though environmental despoliation and the legacies of colonial extraction and dispossession persist. The perspective offered by the Biennale does not deny the environmental damage, exploitation and violence associated with the colonial past and the old coal-powered station, but reframes it through metaphor and multiplicity, invoking a politics of joy in place of conflict. It is beautiful. Nevertheless, it can also be misleading because the acknowledgement of these histories takes place through a lens of optimism that risks aestheticising harm rather than confronting it. When environmental damage and historical trauma are reframed as hopeful sites of renewal, the result is not critique but *artwashing*. It is a sanitisation of space, memory and history that reinforces dominant systems under the guise of transformation. These dynamics reflect the broader tension that, although contemporary art often lays claim to political urgency, it remains embedded in the very systems it seeks to critique. Such a condition is fundamentally incompatible with the potential of art as a form of environmental activism.

Nevertheless, the challenges discussed do not imply a rejection of environmental art. Instead, the understanding that emerges from this study is the importance of recognising its limits. Agnes Denes's *Wheatfield – A Confrontation* (fig. 6.2) offers a compelling example of

how such limits do not diminish the value of an artwork. When Denes planted a field of wheat on prime real estate in New York in 1982, a stone's throw from Wall Street, the work subtly prompted questions about capitalism, environmental concerns, world hunger and the commodification of land. The most striking and sensuous aspect of the work was its scent. As commuters passed by on their way to work, the fragrance of ripening wheat offered a surprising hint of nature within an intensely urban environment. Nevertheless, like all politically engaged artworks, *Wheatfield* contained contradictions. It highlighted environmental concerns even though, at the same time, it created an environmental footprint, as it required large volumes of water for irrigation. This tension undermined the work's effectiveness as activism but did not diminish its aesthetic power. Both the scent and the visual presence of *Wheatfield* linger in the collective memory, especially the image of a vast golden field with the Statue of Liberty in the distance (fig. 6.3), a silent emblem of freedom that suggests freedom must also include freedom from hunger.

Wheatfield exemplifies that environmental art undoubtedly *does* something, but that something does not necessarily translate into activist outcomes. Part of being an artist, a critic or a viewer is contending with what that something might be. However, it is precisely this inability to pin art down to a single meaning that bestows upon it its lasting power and appeal. The pressure to embed a clear social or political message in the work can weigh heavily on artists. It can result in art that strains too hard for clarity or certainty, rendering the work didactic and flat because art's power comes from evoking feelings and meanings that cannot be fully explained or pinned down. When Denes planted her field of wheat, some likely grasped its deeper implications while others enjoyed the beauty of the scene and the scent of the grain. Good art is not always understood and sometimes it goes unnoticed. The takeaway, then, is not that environmental art is powerless but that its power lies elsewhere. Its strength is not in offering solutions but in revealing tensions and creating space for critical questions where there is an expectation of answers. It is in this ambiguity that both its critical potential and its limits reside.

These understandings have reshaped my thinking as an artist. I no longer see my role as one of raising awareness, conveying urgency or seeking solutions. Instead, the research has sparked an interest in exploring the entanglements, the failures, the co-optations and the ideological compromises that mark environmental discourse in art. It has led to a deeper curiosity about how these contradictions present in an artwork, whose interests they might serve, and whether the art form can disrupt them.

Importantly, I have come to understand that any exploration must proceed with the understanding that environmental art, and political art more broadly, carries an ethical responsibility to resist the allure of hope if that hope merely obscures harm. In this resistance lies a different kind of agency, one that stays with the trouble.¹ Through this reorientation, the questions that underpin the artwork are now significantly different from those that drove my practice before this research began. It has become evident that, rather than asking how art can drive change, it is far more helpful to ask what art reveals when it fails to do so, what it discloses about the systems it participates in, the values it reflects and the compromises it cannot avoid. The task of an artist is not to resolve contradiction but to make it visible and difficult to ignore. This approach is essential not only because ambiguity is the inherent condition that makes art engaging, but also because the complexities embedded in environmental art reflect the complexities of the environmental crisis itself. Finding a way out of this crisis is impossible without a clear reckoning with the problems and contradictions involved in addressing global warming. Within this context, the ultimate aim is to expose these complexities by opening a critical space in which the tensions of environmental art can be held up to the light – not to the Biennale’s *Ten Thousand Suns* of radiance, but just enough light to show where the cracks are.

¹ Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham: Duke University Press, 2016). The phrase “Staying with the Trouble” refers to Haraway’s call to remain present and engaged with the complexities and difficulties of contemporary crises even when solutions are not clear or simple, rather than escaping into denial, despair, or a false sense of optimism.

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IMAGES



Figure 1.1 Caspar David Friedrich, *The Monk by the Sea*, 1808, oil on canvas, 110 x 171.5 cm, Alte Nationalgalerie, Berlin, Germany.



Figure 1.2 John Constable, *The Wheat Field*, 1816, oil on canvas, 54.6 x 78.1 cm, Clark Art Institute, Williamstown, Massachusetts, USA.



Figure 4.1 Edward Burtynsky, *Nickel Tailings #35*, 1996, chromogenic process colour print, 89.5 x 119.1 cm, Cleveland Museum of Art, Cleveland, Ohio, USA.



Figure 4.2 Edward Burtynsky, *Oil Fields #2*, 2002, dye coupler print, 101.8 x 127.3 cm, National Gallery of Canada, Ottawa, Ontario, Canada.



Figure 4.3 Olafur Eliasson, *The Weather Project*, 2003, installation in the Turbine Hall, Tate Modern, London, United Kingdom. Photography: Tate Photography (Andrew Dunkley & Marcus Leith).

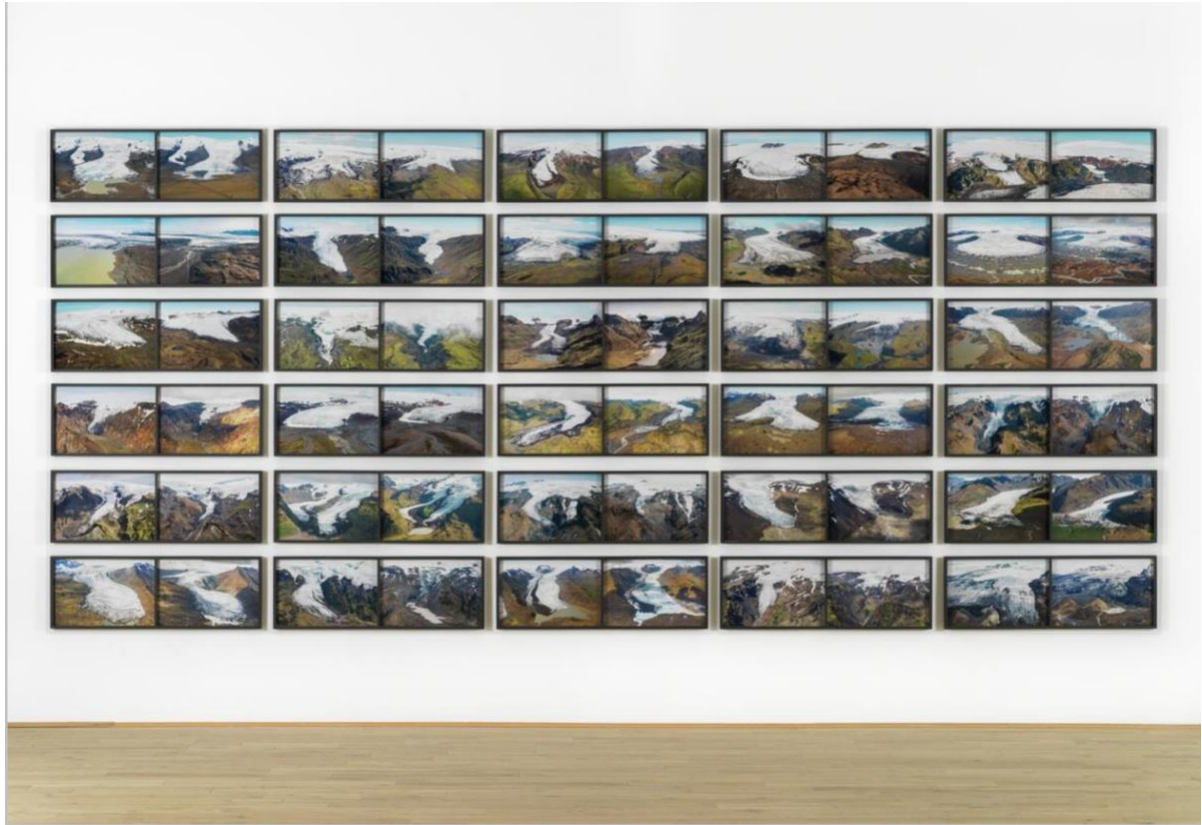


Figure 4.4 Olafur Eliasson, *The Glacier Melt Series 1999–2019*, 2019, installation view, Tate Modern, London, United Kingdom. Photography: Michael Waldrep/Studio Olafur Eliasson.



Figure 4.5 Olafur Eliasson and Frederik Ottesen, *Little Sun*, 2012, Tate Modern, London, United Kingdom. Photography: Tomas Gislason.



Figure 4.6 Tomás Saraceno, *Hybrid Solitary Semi-Social BD+23 4615* Built by: a Solo *Nephila Inaurata* - Four weeks, an Ensemble of *Cyrtophora Citricola* - Five Weeks, rotated 90°, 2015, spider silk, carbon fibre, glass, stainless steel, 107 x 167 x 107 cm, Tanya Bonakdar Gallery, New York, USA. Photography: Studio Tomás Saraceno.

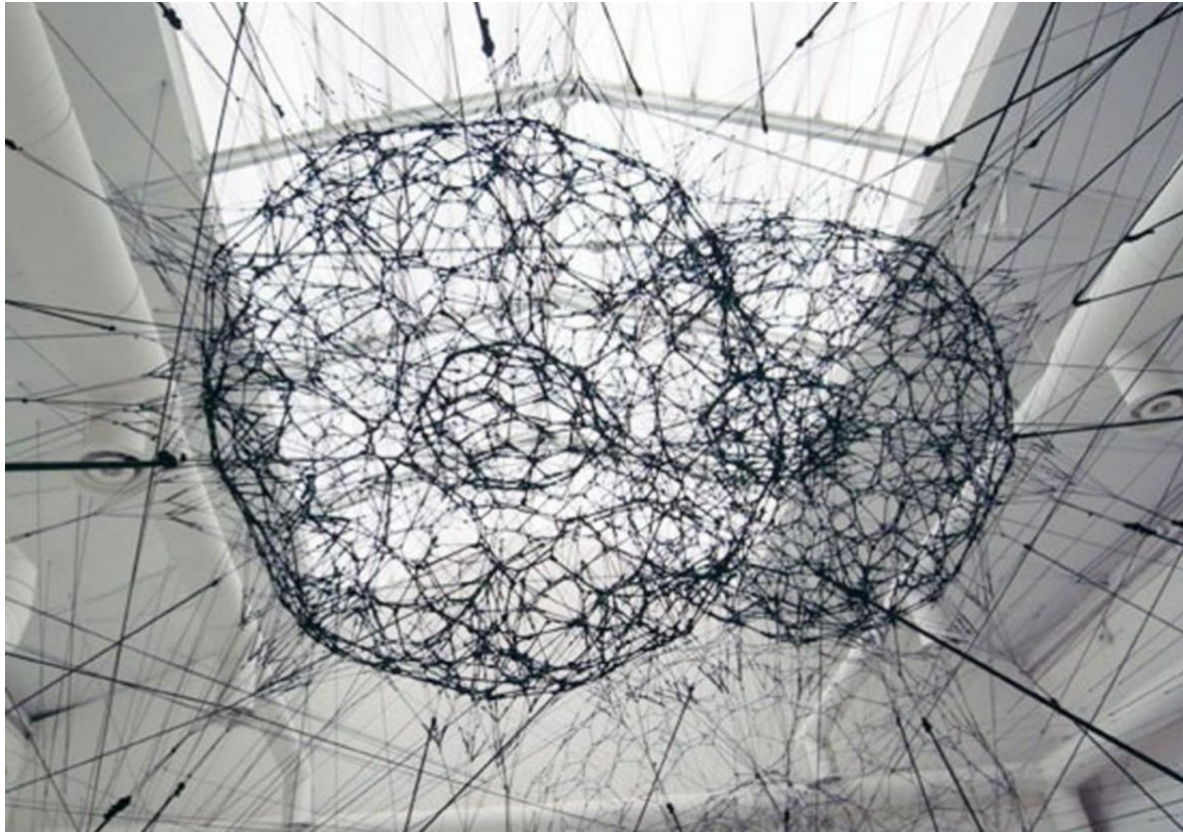


Figure 4.7 Tomás Saraceno, *Galaxies Forming along Filaments, like Droplets along the Strands of a Spider's Web*, 2009, installation view, 53rd Biennale di Venezia, Venice, Italy.

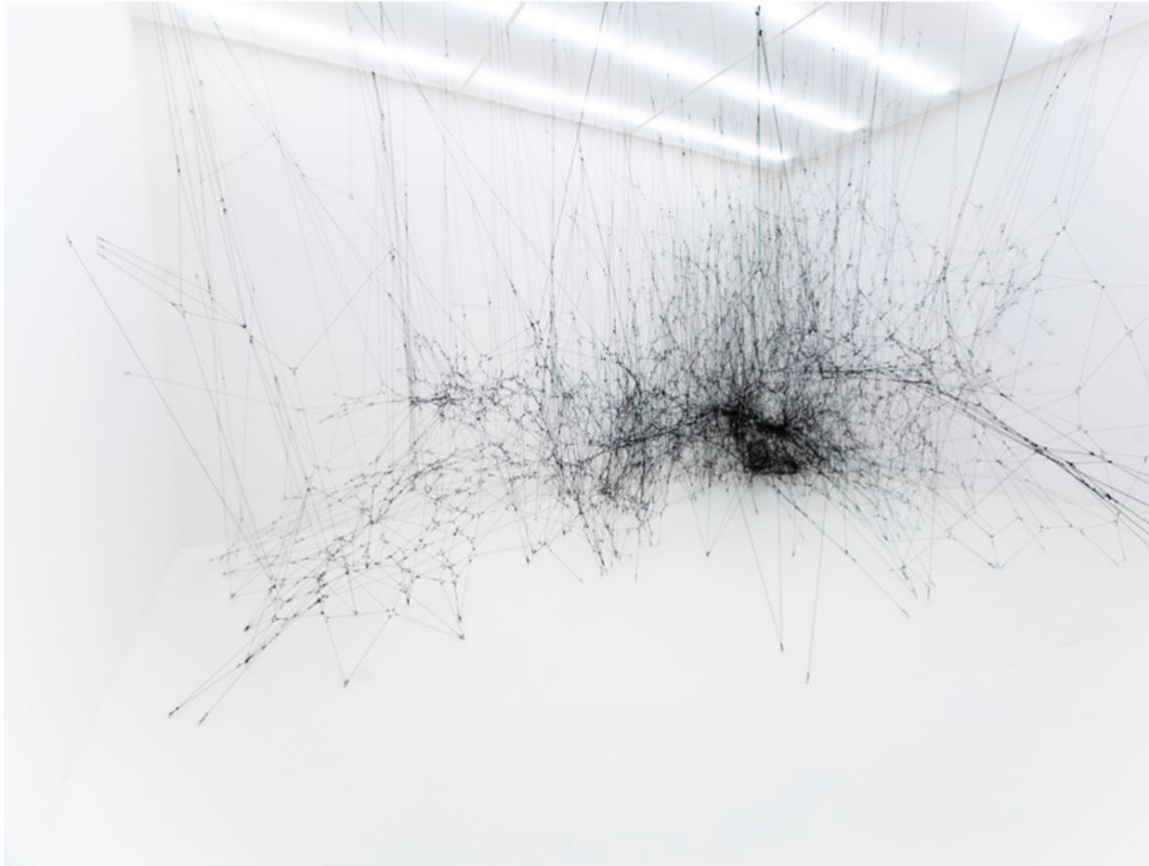


Figure 4.8 Tomás Saraceno, *14 Billions (Working Title)*, 2010, black rope, black elastic cords, hooks, installation view, Sørlandets Kunstmuseum, Oslo, Norway.



Figure 4.9 Lara Almarçegui, *Mineral Rights - Tveitvangen*, 2015–ongoing, slides and text on HD video, Ellen de Bruije Projects, Amsterdam, Netherlands.



Figure 4.10 Lara Almarçegui, *Agras Volcano Mineral Rights*, 2019, video still, IVAM – Institut Valencià d'Art Modern.



Figure 4.11 Lara Almarçegui, *Untitled – Material Construction of the Spanish Pavilion*, 2013, installation view, 55th Biennale di Venezia, Venice, Italy.



Figure 5.1 Patrizia Biondi, *Postnormal Economic Deficit Disorder*, 2021. Recovered cardboard, paint. 95 x 57 x 11.5 cm.



Figure 5.2 Patrizia Biondi, *Handle with Care*, 2021, recovered cardboard, paint. 125 x 62 x 11.5 cm.



Figure 5.3 Patrizia Biondi, *A Dummies' Guide on How to Eat Raw Onions in Public and Other Tactical Acts of Vacuous Performance*, 2021, recovered cardboard, paint. 150 x 100 x 14 cm.



Figure 5.4 Patrizia Biondi, *Entlemen Ection*, 2021, recovered cardboard, paint. 92 x 58 x 12 cm.



Entlemen Ection, side view.

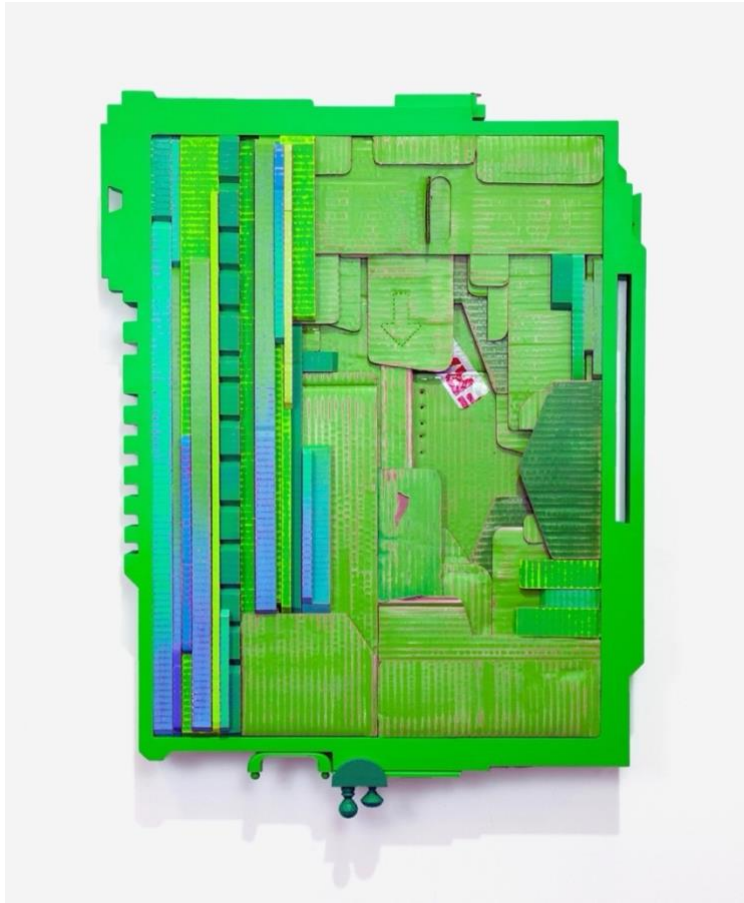


Figure 5.5 Patrizia Biondi, *Vitalize Green Dunamis*, 2023, recovered timber, recovered cardboard, salvaged door handles, house paint. 98 x 74 x 9 cm.



Figure 5.6 Patrizia Biondi, *Recovered Polystyrene Packaging, Duly Purchased Hanging Bracket, PVC Pipes, Resin, Binding Agents, Fungicides – all Meticulously and Sustainably Covered in Paper Pulp and Red House Paints*, 2024, salvaged materials, paper, paints. 70 x 20 x 36 cm.



Figure 5.7 Patrizia Biondi, *Recovered Chair Parts, Post Office Boxes, Salvaged Polystyrene Packaging, Appropriated Tap, PVC Pipes, Bunnings Plastic-Coated Hanging Hook, Resin, Binding Agents, Fungicides – all Meticulously and Sustainably Covered in Paper Pulp and Pink House Paints*, 2024, salvaged materials, paper, paints. 74 x 50 x 56 cm.

The singular life-giving body that is the sun, like the world it shines light upon, has been known under thousands of different words in as many languages. Each name carries a different cultural viewpoint, and many do not rely on a vision of a single sun. The image of ten thousand suns evokes a scorching world, both in cosmological visions and in our present moment of climate emergency and of a world ablaze.

In this vein, the 24th Biennale of Sydney presents its largest display in this site – open to the public for the first time in more than a hundred years – White Bay Power Station. Located on the lands of the Wangal people, this gigantic empty shell, where mountains of coal were brought and burnt, is a monument to the absurd effort that has been needed to power the settler colony, and to put in motion both its real and symbolic machinery.

Yet ten thousand suns also conveys the joy of cultural multiplicities affirmed, First Nations understandings of the cosmos brought to the fore, and carnivals as forms of resistance rallying against colonial oppression and dehumanisation. *Ten Thousand Suns* kindles through these different layers, acknowledging the deep crises derived from rampant exploitation while refusing to concede to an apocalyptic vision of the future. This politics of doom can be seen as attempts by the same forces to render impossible the overcoming of the multiple crises that they themselves have produced.

And yet the sun doesn't stop shining. It doesn't stop when empires wither and want to take down the light of day with them. It didn't even stop in horror when places and continents were broken by these empires, invaded and settled. It did not stop when the HIV/AIDS pandemic was left to run through bodies, communities, and dreams. The suns shone on. They shed light below where broken pieces were being put together. Remembering what was forgotten, forbidden, and creating anew. Mourning and returning to life. In strength and exuberance. In carnivals of rays and radiance. In lineages of resistance and collective power. In Mardi Gras. Under ten thousand suns dancing gently like a morning.

Ten Thousand Suns
24th Biennale of Sydney

“The partnership between the Biennale of Sydney and the Fondation Cartier pour l'art contemporain brings outstanding commissions of Aboriginal and Torres Strait Islander art and curatorial excellence to the rest of the world. It was with great enthusiasm I accepted a new role as the inaugural Fondation Cartier First Nations Curatorial Fellow. This continues a trajectory for me in bringing visibility to the incredible art and culture of global Indigenous voices, supporting them at the forefront of the Biennale. Through this Curatorial Fellowship I am honoured to work alongside the commissioned artists and expand the development of strong curatorial perimeters with First Nations peoples”

Tony Albert
Fondation Cartier pour l'art contemporain
First Nations Curatorial Fellow

We acknowledge the Traditional Owners of Country, in particular the Wangal, Gadigal and Bidjigal peoples on whose land the Biennale of Sydney is located. We recognise their continuing connection to land, waters, and culture and pay our respect to Elders, past and present.

White Bay Power Station is situated on this stretch of Country now known as Bays West, known for millennia as Gari Gurad/Nura (Saltwater Country) and Nattai Gurad/Nura (Freshwater Country). This Country is celebrated for vast expanses of garaban (rock and sandstone) which in some places provides shelter, gibbaragunya (stone/cave shelters), and in other places creates yiningmah (steep cliffs).

Figure 6.1 Curatorial statement at the entry of *Ten Thousand Suns*, 24th Biennale of Sydney, 2024, White Bay Power Station, Sydney, Australia.



Figure 6.2 Agnes Denes, *Wheatfield – A Confrontation*, 1982, Battery Park landfill, Manhattan, New York, USA. Photography: John McGrall.



Figure 6.3 Agnes Denes, *Wheatfield – A Confrontation*, 1982, Battery Park landfill, Manhattan – Golden Wheat (Close up), C-Print, 40 x 50 cm, Leslie Tonkonow Artworks + Projects, New York, USA.