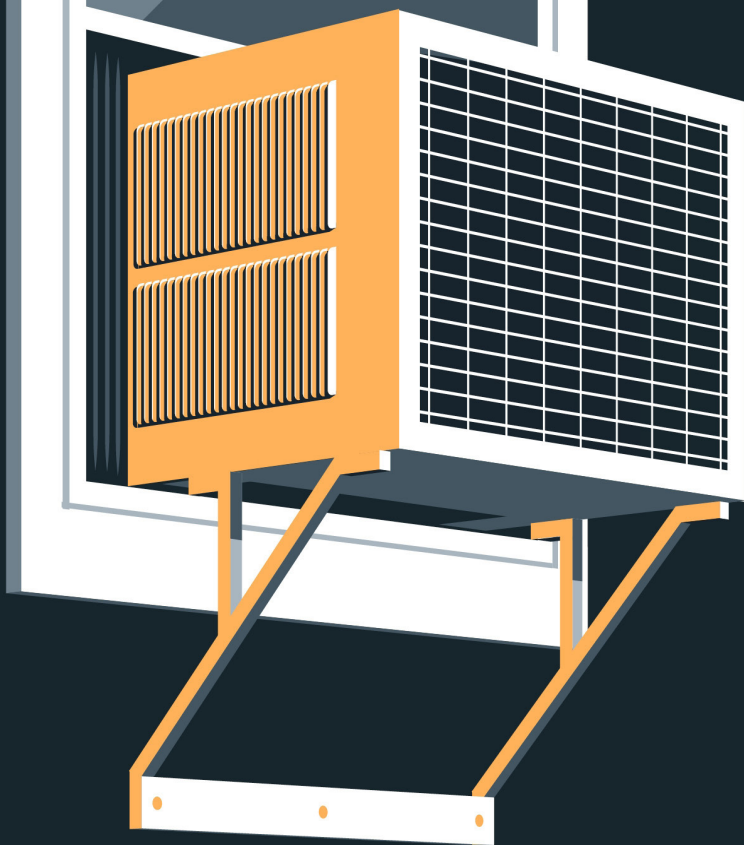


OBJECT LESSONS



air conditioning

HSUAN L. HSU

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Air Conditioning

HSUAN L. HSU

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INTRODUCTION

WHY AIR CONDITIONING?



FIG. 1 *The Hottest August* (dir. Brett Storey, 2019).

As I completed drafting this book in the unseasonably hot summer of 2022, air conditioning seemed to be everywhere I looked. Writing at a cafe patio in the sweltering heat (I was minimizing indoor time to reduce Covid-19 exposure), I was often engulfed by fumes from cars left running in

the parking lot so the AC could continue uninterrupted while someone went inside to order drinks. In an Uber in Toronto, my driver pulled over and held his overheated phone up to the air conditioner until he could regain access to the itinerary. Amid record heat waves in Northern California, where I live, residents were asked to cut down on energy usage during peak hours so that countless AC units on full blast wouldn't overtax the grid. Along with the temperature, the cost of electricity soared, making AC increasingly inaccessible to lower-income households. In the news, climate activists glued themselves to paintings exhibited in air-conditioned museums. Teachers on strike in Columbus, Ohio included air-conditioned schools among their core demands. Fifty-three migrants from Mexico, Honduras, Guatemala, and El Salvador died of heat exposure and asphyxiation in a trailer truck abandoned in San Antonio, Texas, whose driver said he didn't notice the AC had stopped working.

Air conditioning is more widespread than ever in the 2020s, and we have never been more aware of its problems as a quiet, ubiquitous, yet unevenly distributed technology that requires massive amounts of fuel and creates greenhouse gas emissions. As climate change continues to devastate the most vulnerable communities worldwide, air conditioning has begun to lose its status as an iconic example of modernity's wondrous capacity to improve living conditions. It is now difficult to deny that air conditioning is an unsustainable and unevenly distributed technology that

mitigates extreme heat in some places and in the present by emitting pollutants elsewhere, and far into the future. Air conditioning—a technology that middle-class Americans were long encouraged to take for granted—effectively transfers thermal comfort from the outdoors (including underground energy reserves and a stratosphere increasingly suffused with greenhouse gases) to the indoor spaces of those who can afford it. And as its emissions contribute to heating our planet, air conditioning makes itself increasingly indispensable: buildings, factories, digital devices, data servers, and life forms all depend on mechanical cooling to mitigate the effects of intensifying heat.

I was first moved to write this book after watching Brett Storey's haunting documentary, *The Hottest August* (2019). The film depicts a chilling disconnect between the omnipresent threat of climate change during one of New York's hottest summers on record and the everyday concerns of the diverse New Yorkers interviewed by Storey. For a film about climate change, there is surprisingly little mention of the topic—and yet its effects are everywhere. In the opening scene (Fig.1), for example, two union workers leaning out of an apartment window blame their workplace difficulties on immigrants willing to work for lower wages. Protruding from the window, their upper bodies mimic an AC condenser jutting out from an adjacent room. The air conditioner quietly entangles these workers with the patterns of immigration they see as an existential threat, since climate change (generated in part by AC emissions)

has become a leading driver of migration worldwide. In scenes like this, the understated presence of air conditioning draws our attention to this nearly ubiquitous technology that allows many of the film's subjects (asked to talk about their anxieties concerning the future) to focus on economic concerns without directly addressing our immanent climate catastrophe. Wide exterior shots of walls interspersed with window AC units, along with the film's ambient soundtrack, create an uncanny sense of space and time: a present that can be comfortably inhabited only thanks to a technology whose emissions will linger long into the future. *The Hottest August* left me anxious about how air conditioning quietly desensitizes its users to the embodied effects of our hot summers, while its emissions make future summers even hotter.

What makes *The Hottest August* feel so unsettling—with both the climate and air conditioning units appearing only in the background—is the elemental intangibility of the changing atmosphere. Although our lives depend on it, air is notoriously difficult to represent. In both everyday speech and classical philosophical treatises, air serves as a metaphor for emptiness: we talk about things vanishing “into thin air,” and Marx and Engels note that, under capitalism's waves of creative destruction, “all that is solid melts into air.” As critic Tobias Menely explains, these metaphors imagine the air as an insubstantial and limitless repository: “To evaporate or to melt into air is not to disappear from view but to dissipate altogether. The atmosphere is a space so vast and empty

that in it something, effectively, becomes nothing.”¹ Menely argues that this idealization of air as that which is “outside” of history has made it difficult to understand how human history and activity have both transformed and been transformed by the materiality of air. Because it is designed to sustain ideal temperatures in a given space while emitting greenhouse gasses and waste heat outside, air conditioning perpetuates this problem of not being able to think about air in historical and material terms. In other words, air conditioning creates a separation between two kinds of space, and two kinds of air: interior air so comfortable that one doesn’t have to give it a thought, and outdoor air that’s supposedly so immaterial and plentiful that one also doesn’t have to think much about it.

Air conditioning is an object lesson in both the power and the unacknowledged consequences of what we take for granted. It suffuses many of the spaces in which Americans—and, increasingly, middle-class people around the world—live, work, and play. It provides the luxury of not having to think about the weather, air quality, or how outdoor temperature is affecting one’s body. As someone who spends a considerable amount of time reading, writing, and talking about books, I have often been a frequenter of climate-controlled spaces. During the years I lived in unairconditioned homes (and during my teenage years, when the thermostat was a constant bone of intergenerational

¹Tobias Menely, “Anthropocene Air,” *Minnesota Review* 83 (2014), 97.

contention at home—likely because my parents had grown up without AC in the subtropics), I have turned everything from Kmart patio displays, fast food restaurants, shopping malls, and the lobbies of hotels in which I couldn't afford to stay into makeshift workspaces. More recently, my work routines have been structured by regular stints in libraries, university offices, classrooms, and cafes. In such spaces, the writing and thinking body is sustained by the ever-present but hardly noticed comforts of air conditioning, heating, and ventilation. We might say we appreciate the atmosphere of a cafe, but we don't usually think about that atmosphere in material terms: the smell of brewing coffee, the ambient temperature, the filtered air. Air conditioning relieves us of having to think about the air, so that we can think about other things.

Writing in a cafe or library, my laptop is one of dozens scattered throughout the space, each thermally regulated by its own silent cooling system. Like our bodies, laptop computers function best within a certain temperature range. Everyone is working online, tapping into streams of data stored in distant servers that generate massive levels of heat. The internet data centers that house most of those servers consume vast amounts of energy, both to store data and to keep their storage units cool—usually around 65 to 80 degrees Fahrenheit. Here, too, air conditioning relieves the thinking body of its burdens: all the books and files we don't have to carry around because we can access them online, all the details we don't have to track down in a reference

library or commit to memory thanks to Google. Perhaps, in the future, books like this one will be partially drafted—and “read”—by heat-intensive AI technologies navigating information drawn from continuously air-conditioned data centers.

Descartes’s Stove

Among the most eloquent examples of ambient temperature as a precondition for thought is the little-known story of Descartes’s stove. (Because they were available long before artificial cooling, heating technologies are at the center of many early Western writings that reflect the cultural underpinnings of thermal comfort and air conditioning). In his *Discourse on Method*, published in 1637, the philosopher René Descartes recalls spending the night of November 10, 1619, alone in a quiet *poêle*—a room heated by a stove, to which he had retreated from the onset of winter. Here, he writes, “I was completely free to converse with myself about my thoughts.” That night, Descartes had three dreams: in the first, a strong wind forced him against a church; in the second, he witnessed a light-filled vision in a room while a storm raged outside; and in the third, he sat at his desk and read in an encyclopedia *Quod vitae sectabor iter?* [“What road shall I follow in this life?”]. The young philosopher interpreted these dreams as a sign that he should devote his life to unifying the sciences, and he would subsequently

attempt this by creating analytic geometry and by developing a philosophical method grounded in rationality—one that he believed would render us “masters and possessors of nature.”²

Both of Descartes’s innovations are steeped in dualism, or the belief that the mind is distinct from the body. Analytic geometry represents space as a vacuum oriented by abstract coordinates and occasionally inhabited by bodies, not as an atmosphere already filled with airborne materials of varying composition, density, temperature, and velocity. The stove-heated room offered Descartes a vision of thought isolated from climate: across his three dreams, he becomes increasingly sheltered from the storm outside as he comes closer to discovering his life’s work. Only under conditions of climate control could Descartes begin creating a philosophy grounded in the fiction that the mind could be disentangled from the thinking, breathing body—a body sensitive to atmospheric factors like air quality and ambient temperature. This fiction is refuted by the etymology of “temperature”: derived from the Latin for “mixture,” *temperature* suggests a body that is blended with its surroundings. How would our understanding of Enlightenment philosophy and its legacies change if we revised Descartes’s famous proposition, *I think, therefore I am*, to reflect the thermal conditions of a particular approach to thinking: *I think in a stove-heated*

²René Descartes, *Discourse on Method and Meditations on First Philosophy*, trans. Donald Cress, 4th ed. (Indianapolis: Hackett, 1998), 7, 35.

room, therefore I am? Or, perhaps, I think my mind is distinct, therefore I am in a climate-controlled room?

Why have philosophers had so little to say about Descartes's stove, and so much to say about his dreams, his resolve, and his conception of analytic geography on that winter's night? Suppressing the agency of the stove makes it easier to tell a simple story about the agency of the individual thinker. But it has made it that much harder to discern the subtle yet powerful ways in which modern air conditioning technologies condition thought, culture, and social experience. While researchers have devoted considerable attention to improving AC technology and studying optimal indoor temperatures, we know comparatively little about the implications of the variable availability of air conditioning across time and space for psychology, health, culture, and socioeconomic inequality. How do air quality and ambient temperature affect people's moods, relationships, and work experiences? Their life chances? What kinds of thoughts or feelings are enabled by comfortable temperatures, and what thoughts or feelings might be hindered by such comfort?

Descartes's suppressed dependence on the stove provokes this book's central question: how have social relations, culture, and everyday experiences been quietly shaped by air-conditioning technologies that modify indoor temperatures in some places while intensifying the effects of climate change elsewhere? This question approaches air conditioning not only as a technology for cooling the air, but more generally as a process that *conditions* human beings by conditioning

the air we inhabit. While this book's reflections are oriented by the air conditioner as object, it also moves outward, following the consequences of air conditioners not only for the interiors they cool, but for what the novelist Mohsin Hamid calls "the great uncooled"—the vast populations worldwide with little or no access to cooled air, and all too much access to its environmental consequences.

“The Ultimate Remoteness, Put-it-Somewhere-Else-Machine”

Climate control plays a very different role in the thinking of the environmental philosopher Val Plumwood than it did for Descartes. Best known for her visceral meditation on being attacked by an alligator, “Being Prey,” Plumwood devoted much of her work to critiquing the host of ecological and social problems that stem from what she calls the “hyperseparation” of humanity from nature. Instead of taking for granted (as Descartes did) the conditions of comfort that support a specific mode of thinking, Plumwood takes the air conditioner's far-flung externalities as an occasion for ethical reflection. She coins the term “shadow places” to underscore how environmental externalities—or indirect side effects for which producers and consumers bear no legal or economic responsibility—are often concentrated in poor communities that have been made vulnerable by histories of racism and colonialism. Positioning Ogoni communities located at sites

of oil extraction and pollution in the Niger Delta as a “shadow place” that enables climate-controlled rooms in the Global North, Plumwood writes, “We must smell a bit of wrecked Ogoniland in the exhaust fumes from the air-conditioner, the ultimate remoteness, put-it-somewhere-else-machine.”³ Instead of a technology that produces comfort, Plumwood reconceptualizes the air conditioner as a technology that draws comfort and well-being from one place and puts it in another. The air conditioner’s capacity to generate—in one place—atmospheric conditions so comfortable as to go unnoticed comes at the cost of devastated air, water, and human and nonhuman lives in global sites of coal and oil extraction. The exhaust fumes created by air conditioning also displace thermal discomfort across space and time, contributing to greenhouse gases that are heating the planet in ways that disproportionately affect the most vulnerable places and populations. The consequences of generating comfortable air expand outward across a vast range of spaces that are especially susceptible to climatic instability.

One implication of this is that a book about air conditioning can’t be restricted to the history of the technology, or to the perspectives of its consumers. As an object lesson, air conditioning stretches across toxic sites of fuel extraction, interior spaces suffused with machine-generated thermal

³Val Plumwood, “Shadow Places and the Politics of Dwelling,” *Australian Humanities Review* 44 (2008), 139-50.

comfort, building exteriors warmed by “waste heat” from cooled interiors, and uneven climate crises across our warming planet. In sustaining comfortable spaces through ultimately unsustainable means, air conditioning produces a high-stakes differentiation of atmospheres—a society of sealed-off bubbles in which the quality of atmospheres, embodied experiences, and material objects come to depend on controlling the boundaries between internal and external spaces, as well as the boundaries between different kinds of interiors.

Air Conditioning and Culture

We tend to think of the air conditioner as a machine for human comfort, but it has just as great an impact as an invisible infrastructure for industrial processes and cultural institutions. Aside from its effects on humans, air conditioning has an indispensable precondition for many nonhuman objects and materials, as well as ostensibly immaterial data: first invented in 1902 to control humidity that was disrupting the multicolor printing process at a Brooklyn printing company, air conditioning is now indispensable to everything from manufacturing, pharmaceuticals, and the food and beverage industry, to museum conservation and cloud data. “Process air conditioning”—or the modification of the atmosphere designed to optimize industrial processes—has made it possible to standardize and stabilize a vast range of materials, from baked goods, fermented foods, and chocolate, to fabrics, oil paintings,

electronics, metals, and printed matter; whether you're reading this book electronically or in print, air conditioning helped make it possible. Laboratory science also relies on climate control to provide stable atmospheric conditions for controlled, repeatable experiments. If air conditioning makes it possible to imagine humans sealed off from their natural environment, it also sustains the fantasy that standardized and stable objects can be permanently sealed off from the effects of climate.

In both its effects on humans and nonhuman materials, air conditioning has become a powerful and insidious infrastructure of racial inequity—a tool for perpetuating racism on autopilot, by means of the everyday atmospheres we inhabit and transform. In addition to considering AC's ecological effects and its importance for nonhuman objects like museum displays and digitized archives, this book will dwell on the perspectives of people with limited access to air conditioning. By positioning climate control as a necessary condition for rational thought, Descartes marginalizes the thought and experience of people who—whether by choice or necessity—live amid uncomfortable or abnormal temperatures. In the ostensibly “public” climate-controlled spaces I discussed earlier—cafes, shopping malls, university buildings, libraries—people are differently vulnerable to profiling, harassment, criminalization, and forcible expulsion on the basis of race, class, gender, and/or disability. What kinds of embodied knowledge do we lose sight of when we assume that rationality requires thermal comfort? In addition to exposing the thermal inequities that sustain the modern world,

we will see that dwelling outside of air-conditioned interiors can lead people to develop more sustainable and equitable techniques for inhabiting climates outside the temperate zone.

While this book will consider historical and scientific aspects of air conditioning—including its physical and psychological effects on humans—its main concern will be with the vast range of relationships between air conditioning and culture. While it will devote some attention to the growing demand and influence of AC in postcolonial nations such as Pakistan, Angola, and Samoa, this book's focus will be on the United States, which has the dubious distinction of being the leading nation in AC usage and energy consumption. American engineers, marketers, and architects have worked hard to create the culturally specific belief that a narrow, stable temperature range is a universal requirement of human comfort. At the same time, many cultural responses to air conditioning are unconscious or minimizing (like Descartes's passing mention of the stove), because air conditioning is most effective when it's least noticed. As the architect Juhani Pallasmaa remarks, we relate to atmospheric qualities like temperature and humidity through “unconscious and unfocused peripheral perception”—a mode of embodied sensation that precedes conscious thought.⁴ Yet, despite this tendency to fade into

⁴Juhani Pallasmaa, “Space, Place, and Atmosphere: Emotion and Peripheral Perception in Architectural Experience,” *Lebenswelt* 4:1 (2014), 243.

the background of our indoor experiences, air conditioning has become central to many of our assumptions about art, culture, thought, and the pursuit of knowledge—in part because air conditioning is a common feature of the laboratories, movie theaters, concert halls, libraries, bookstores, museums, and many (but not all) classrooms designed to house these pursuits.

In this book, I won't be telling you how to set your thermostat, or whether to stop frequenting air-conditioned spaces (for many of us, including myself, that would be highly impracticable). Nor will I make policy recommendations or dwell on the sustainable AC technologies of the future. Instead, I hope the histories, ideas, and cultural perspectives on AC explored in this book will shift how you think about temperature and its relationship to culture, the boundaries of the mind and body, and the supposedly non-negotiable nature of physical comfort. In addition to sharing information about the historical, ecological, and cultural implications of air conditioning, I hope to shift how you perceive this often-unnoticed infrastructure of (some people's) everyday life. Along the way, I'll also introduce projects—from conceptual artworks and public cooling centers to climatically appropriate architecture—that illustrate alternative ways of distributing of air conditioning and thermal comfort.

Atmosphere is an invisible backdrop of everyday life, and yet nothing is more consequential. The air conditioner teaches us not only that atmospheres are a product of culture,

but also that culture is a product of its atmospheres. Because so many encounters with cultural objects that orient our senses of identity, beauty, and human meaning take place in climate-controlled conditions, air conditioning has come to permeate our sense of what a meaningful encounter or thought should feel like. While AC often takes the form of an invisible and anaesthetizing presence, we will take time to sit with works of art, literature, and film that endeavor to bring air conditioning into our awareness. My hope is that these cultural works can help loosen the grip air conditioning has on our sensory predispositions and our assumptions about “normal” conditions of life, and that they can push us to perceive and feel air conditioning differently. By considering both cultural representations of air conditioning and the AC technologies that condition many cultural experiences, I hope this book will help decenter the quietly privileged status of thermal comfort in contemporary culture.