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## Perspectives

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Daniel A. Barber

## Climate-Sensitive Architecture as a Blueprint: Habits, Shades, and the Irresistible Staircase

### Patterns of Desire

The relationship of climate to the built environment has been of increasing interest over the past decade. As is generally known, the production and operation of buildings contributes between 40 percent and 60 percent of the carbon emissions produced by the industrialized world. For this reason, buildings have become a site for the making of efficient energy systems—or at least of attempts to do so—through innovations in everything from thin solar panels to design that maximizes nonmechanical heating or cooling potentials. Architecture, as a profession, a cultural realm, and a discursive space, is entangled with ambitions for energy transitions. Indeed, it is difficult to imagine, not to mention enact, a low-carbon future without a substantive transformation in the ways that buildings are designed, built, and inhabited.

If architecture is, in this sense, a locus for contemporary energy debates, it is so in a fashion that demonstrates the complexity of these discussions, even their seeming intractability. This is true in terms not only of technology, policy, and regulation relative to carbon emissions, but also of the cultural dynamics through which architecture is developed and refined. In other words, across this nexus of architecture, climate, and energy, two important considerations emerge. To what extent can innovation produce apparent solutions? And is it possible for design to encourage different kinds of cultural aspirations and to build, or possibly renovate, the conditions that would allow low-energy ways of living to proliferate? Recent historical scholarship and design research, by Nerea Calvillo, Jiat-Hwee Chang, Lydia Kallipolitti, Kiel Moe, and many others,<sup>1</sup> have intensified this discussion.

1 Jiat-Hwee Chang, *A Genealogy of Tropical Architecture: Colonial Networks, Nature, and Technoscience* (New York: Routledge, 2016); Lydia Kallipolitti, *History of Ecological Design*, Oxford Research Encyclopedias Online, April 2018, <http://environmentalscience.oxfordre.com/view/10.1093/acrefore/9780199389414.001.0001/acrefore-9780199389414-e-144>; Kiel Moe, *Insulating Modernism: Isolated and Non-isolated Thermodynamics in Architecture* (Basel: Birkhauser, 2014).

Furthermore, numerous critics outside the field have illuminated the intensity with which buildings—as cultural and technological objects—have come to be seen as both obstacles and opportunities in a collective ambition to reconsider ways of life amidst climatic instability. Amitav Ghosh, in his landmark text *The Great Derangement: Climate Change and the Unthinkable*,<sup>2</sup> is interested in clarifying the extent to which the climate challenge is rooted in culture as much as technology. He identifies the importance of buildings early on, in two seminal passages: “Culture generates desires,” Ghosh writes, “for vehicles and appliances, for certain kinds of gardens and dwellings—that are among the principal drivers of the carbon economy.” A seemingly simple causal imperative, locating design intention as essential to broad social transformations. Focusing even more closely on the cultural dimensions of design and its reception, Ghosh continues, “If contemporary trends in architecture, even in this period of accelerating carbon emissions, favor shiny, glass-and-metal-plated towers, do we not have to ask, What are the patterns of desire that are fed by these gestures?”<sup>3</sup> At stake, for Ghosh, is how new buildings, new narratives, and new cultural practices can adjust such patterns and foster new desires.

Perhaps even more significant than the embodied energy of the glass and metal plates Ghosh refers to are the thermal conditions such façades produce: the shiny towers of late capitalism are, in general, fully sealed systems, reliant on mechanical conditioning. These buildings reflect how cultural desire, enacted in a range of social and geographic contexts, has produced interior spaces with a consistent temperature and humidity, all generated through fossil-fueled air-conditioning and heating systems. In the brief excursus below, I want to outline a historical moment when such desires, and the technologies that facilitated them, were still in development, and when other ideas and processes regarding everyday life inside buildings were still seen as viable and available—that is, before a diffuse yet seemingly definitive shift towards mechanical conditioning took over. I will focus on a series of experiments in 1940s Brazil that sought to condition interiors by architectural, rather than mechanical, means, and will outline the kind of politics involved. What emerges is a nuanced historical relationship to a past that is also resonant across a possible future, as cultural desires are, slowly, opening towards other frameworks for inhabiting the built environment, and the planet, on differ-

2 Amitav Ghosh, *The Great Derangement: Climate Change and the Unthinkable* (Chicago, IL: University of Chicago Press, 2016).

3 Ghosh, *The Great Derangement*, 9–10, 11.

ent carbon terms. What emerges as well is an emphasis on the potential for habits—the rote manifestation of patterns of desire—to enact (albeit slowly and through a logic of accumulation) different lifestyles and different consequences for planetary futures.

## Evidence

I want to play this out through a few buildings, to focus on a moment when new kinds of individual and collective habits were seen to be central to the modernization process—almost as an energy system itself. Or, put differently, I am focused on the articulation of an architecture that operated in concert with repetitive gestures as a sort of geophysiological conditioning—the production of a relationship between bodies, buildings, thermal interiors, and climatic instabilities. Such patterns and habits can be framed as a supplement to existing energy conditions, as a politically driven and architecturally activated means to draw the population into modernity. Habit, following Wendy Hui Kyong Chun,<sup>4</sup> is here posed as a means of analyzing historical change. It offers a different set of causal relationships, whereby the aggregation of small gestures is seen as a counter-practice to the accumulation of carbon: an epochal change built on patterns of desire.

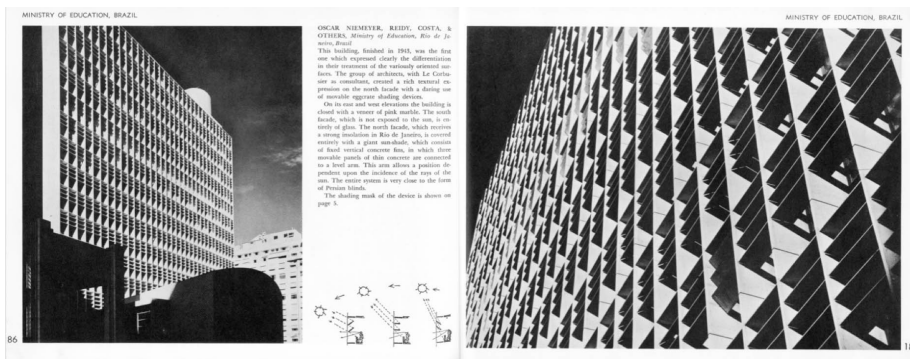


Figure 1: Lúcio Costa, Oscar Niemeyer, Carlos Leão, Afonso Eduardo Reidy, Ernani Vasconcelos, et al., *Ministerio da Educação e da Saúde (MES)*, Rio de Janeiro, 1936–1943. Source: Victor and Aladar Olgay, *Solar Control and Shading Devices* (New York: Reinhold, 1957).

The architecturally induced habits I am interested in are well captured in the Ministry of Education and Health (Ministério da Educação e Saúde—MES) in Rio de Janeiro. The building was designed by Lúcio Costa and a team of Brazilian architects and built between 1936 and 1943. It is a tall, narrow structure with a more amorphous form—an audito-

4 Wendy Hui Kyong Chun, “On Hypo-Real Models or Global Climate Change: A Challenge for the Humanities,” *Critical Inquiry* 41, no. 3 (Spring 2015): 675–703.

rium—intersecting at the base. This established a template for an early phase of modern towers, more or less repeated in the UN Headquarters in New York and in many US embassies around the world, among other buildings built in this same period. Predating, by a decade or so, the proliferation of the shiny glass and metal towers that Ghosh refers to, the Ministry building deploys a second skin to cover the glass-curtain wall and to modulate the effects of the sun on the interior. The north, sun-facing exposure thus protects the interior from overheating through banks of operable louvers nested in an egg-crate façade; the south façade is all glass. The shading devices hold the façade together as a visual field, while the variation in each module is both formally dynamic and effective as a device to engage with the microclimate. As the diagram at the bottom of Figure 1 indicates, the inhabitants could adjust the conditions of the interior according to the path of the sun and their desired interior temperature.

The shaded façade was, as I have argued at length elsewhere, the primary site for creative architectural production in the period.<sup>5</sup> In this specific case, and as part of a cycle of global architectural development, it was deeply enmeshed in the *Estado Novo*: the modernizing, authoritarian-democratic regime of Getúlio Vargas. The building was essential to, and is emblematic of, the social and economic processes of modernization as they came to play out in Brazil. The ministry itself (that is, the government agency, not the building) was focused on improving the education and health of the Brazilian population, deep into the hinterland. The maintenance of the body and the mind were seen as essential to a complex governmental project of transforming the population, relative to a global political economy of globalization, neoliberalization, and the collective optimization of resources. This reflected, in fact quite closely, Michel Foucault's well-known triumvirate of security, territory, and population in his discussion of new governmental regimes, and also clarified the terms by which the public was newly imagined as subject to management and optimization.

A few other examples help to clarify how climate, design, and governance were entangled. The Rio-based firm MMM Roberto (run by brothers Mauricio, Milton, and Marcelo) rose to some prominence in this period through their expertise in carefully shaded buildings for modernizing programs. A number of government commissions—a press agency, airport facilities, technical training institutes—established the

5 Daniel A. Barber, *Climatic Effects: Architecture, Media, and the Great Acceleration* (Princeton, NJ: Princeton University Press, forthcoming 2020).

brothers' reputation relative to both shading mechanisms and political priorities. Of especial interest is their design and construction of the headquarters of the Brazilian Reinsurance Institute (IRB), also completed in 1942. It is compelling both for its façade and for the significance of the activities that went on inside: the IRB housed a government fund intended to assure foreign capital that investments in Brazil would be safe. The Roberto brothers' later factory, warehouse, and offices for the Caterpillar corporation offer a general indication of how modern architecture became essential to Brazil's economic and social development.

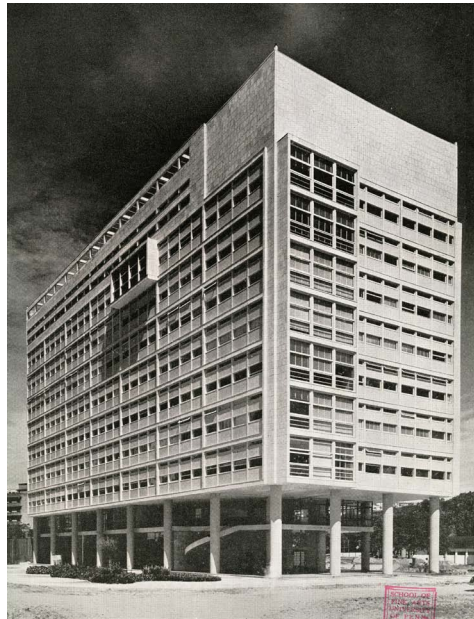


Figure 2:  
MMM Roberto,  
Associação Brasileira  
de Imprensa (ABI),  
Rio de Janeiro,  
1936. Source: *The  
Architectural Forum*,  
August 1944.

The Roberto brothers were prolific along these lines, creating climate-sensitive buildings that reflected the complexity of these socioeconomic transitions. One such example is the Edifício Seguradoras, a speculative office building for the property insurance industry built in 1949; on its sun-facing façade, there were at least four different means of adjusting the conditions of the interior according to the seasonal and diurnal patterns of solar radiation. A weekend retreat for workers at the IRB, commissioned by the Vargas administration, provides an elegant contrasting example in the formal organization of the building—it had a fixed, integrated shading screen rather than one allowing multiple forms of manipulation. The example of the IRB retreat also supports my assembly of these buildings around evident biopolitical notions of self-care: a reinsurance agency that seeks preemptively, it seems, to support the health and happiness of its employees, and a means of using architecture (and the design of the façade in particular) to reflect cultural desire and enact it towards a more open physiological future. At the Marques do Herval, a speculative office building in Rio's center, the brothers were given license to further explore how the inhabitants could control their interior conditions through dynamic interaction with the façade, both through





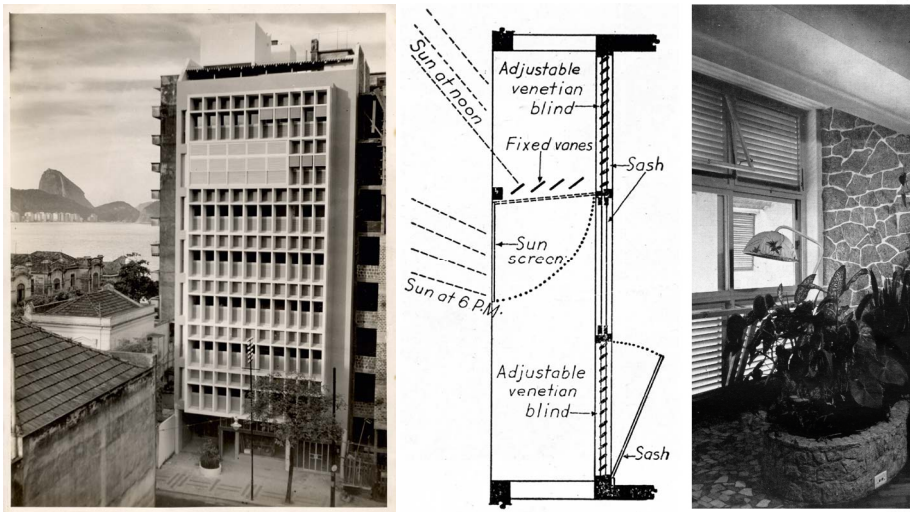


Figure 4:  
MMM Roberto,  
Edifício Mamea,  
Rio de Janeiro,  
1945. Source: *The  
Architectural Review*,  
November 1947.

tiary shading screen. The dynamism of the Edifício Mamea façade was such that it demanded elaborate attention from the inhabitant, with a number of adjustable and fixed elements, as seen in the section drawing in Figure 4. The emphasis is on the façade system as a designed membrane that draws the inhabitant into engagement with climatic patterns. The inhabitants—the family—attended to its needs through these interactions. Though, significantly, in the case of the Roberto family interaction with the façade was likely to have been performed by domestic servants rather than the family members themselves: a substantive complication of the political economy of habit that I cannot fully address here, but which nonetheless begins to indicate a yawning gap between the diagrammed possibilities of interactive, climate-sensitive design and the lived experience of these interiors.

## Habit

Awash in these contingencies, these buildings are best seen as events in the history of a future yet to come: liminal moments of engaging bodies directly in regimes of modernization that seem less like a past, which has since been overcome by the forces of progress and economic growth, and more like a future, a scenario for a new approach to cultural and climatic contingencies. That is to say, as the built environment



has since been overwhelmed by mechanical air conditioning, and as the environment more generally has absorbed the carbon emissions that have resulted from such mechanical proliferation, the way that we think about buildings and about how to inhabit them is undergoing stark transformation. Although, perhaps, not stark enough.

The space of the thermal interior, in both domestic and commercial environments, is thus enacted and emphasized in order to reimagine an embodied relationship to climate—a politics of the everyday. The question becomes: Can we induce habits—in ourselves, our friends and colleagues, our children and grandchildren—that activate a different relationship to fossil fuels? If so, the goal of such architecture, and related scholarship, is to provide a framework in which such patterns of desire can be enacted and emphasized. As Chun puts it, “Habit occurs when understanding becomes so strong that it is no longer reflected, when an action is so free that it anticipates and escapes will or consciousness, or when a being’s repeated actions assuage its own needs.”<sup>6</sup> Habit occurs, in other words, at least in some instances, when it becomes architectural.

Can a building make us act differently? Can it induce new habits? Stated differently: Is the “normalized” thermal condition of the built interior imposed or desired? Much recent work in architectural engineering has focused on adaptive comfort as a means to encourage regional and cultural specificity in the experience of the interior. One built example, more direct perhaps, concerns a staircase. The Bullitt Center, an office building in Seattle designed by the Miller Hull Partnership, has been both excoriated for its awkward solar roof and celebrated as an example of the “Living Building Challenge”: a set of imperatives for design and construction focused on a principle of carbon negativity; that is, on using buildings to produce renewable energy rather than burn fossil fuels. One way the designers sought to reduce the building’s energy load was through the specification of what they called an “irresistible staircase,” a lush wooden arrangement placed “right at the front entrance.” The elevators are tucked in behind, available to those who need them but harder to access. “This stairway has near-magical powers: people can’t seem to resist going up.” Per the building’s website, “the irresistible stair helps the Bullitt Center conserve energy and encourages the tenants to maintain a healthy lifestyle.”<sup>7</sup> Thus, an imperative to make climate-sensitive habits irresistible.

6 Chun, “On Hypo-real Models,” 702.

7 Bullitt Center website, <http://www.bullittcenter.org/building/building-features/active-design/>. On the Living Building Challenge, see Living Future website, <https://living-future.org/>. Both accessed 12 January 2018.

It is, no doubt, too simple a political program to imagine that new and exhilarating architectural interventions can transform the carbon economy. It is also too simple to rely on individual predilections to aggregate towards a global sociopolitical shift that embraces carbon negativity. Yet, the conditioned interior and the staircase become sociopolitical objects available for manipulation on these terms. They are cultural objects that not only propose to generate new desires, but that also open up new spaces of contestation, available for elaboration as a different kind of lived environment in the future.

### Further Reading

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