UNLESS

Unless architects begin to describe buildings as *terrestrial* events, processes, and artifacts, architects will—to professional and collective peril—continue to operate outside the key environmental and political dynamics of this century. The book in your hands attempts a terrestrial description of an architectural icon—the Seagram Building in New York City. It offers an inventory of social and ecological dynamics that occurred on the very thin crust of this planet in the production of one of the most modern of modern buildings. This mode of description offers a way to peer into the terrestriality of architecture through a framework that overtly merges energetics, ecology, world-systems analysis, and thus, inevitably, the politics of building. In turn, it offers a way to begin to reason and imagine terrestrial architectures that would better situate, support, and amplify life on this planet.

This is my focus because modern descriptions of architecture have, in methodological terms, emerged from either the humanities, natural sciences, *or* social sciences. That is, architects routinely engage modes of epistemic and disciplinary isolation to describe decidedly non-isolated phenomena like building and urbanization. In doing so, they have tended to obscure and obfuscate key aspects of architecture, artificially dividing what is actually a highly composite matrix of terrestrial activity. Consequently, much of architecture's terrestrial origins and effects remain abstract, unknown. The difficult whole of architecture and urbanization recedes accordingly in our collective mind, along with its relevance and latent agency. Moreover, architecture's entrained, divided modes of description are directly related to— generators of—the manifold ecological and social degradations that result from and through architecture. Viewed in retrospect, these degradations are not at all surprising, given the contradictions and occlusions associated with knowledge constructed through intentionally

divergent considerations, objectives, methods, and perspectives. Ecological and social degradations are inherent to a model of knowledge and practice based on divided descriptions of otherwise constitutively conjoined terrestrial phenomena. Degradation, it seems, was baked into the divided model of knowledge and practice that architecture's discourse, pedagogy, and practice has entertained for so many decades. This has not always been the case. In fact, the nonmodern history of architecture reflects much more composite descriptions of building as a terrestrial activity.

As an alternative mode of description—and as a response to contemporary environmental, social, *and* architectural concerns—the framework of *Unless* combines a thermodynamic assessment of large systems—such as building—based on an ecosystem methodology. I call this "construction ecology." It provides a picture of the web of corporal and incorporeal relations that presuppose building. It gives those telluric relations a sense of scale and relative hierarchy. It further helps understand what all building is and does, and helps us architect in different ways accordingly. Construction ecology describes the *physical constitution* of building. But that is only half of the methodological framework deployed in this book to describe what I have come to call terrestrial architecture. The eco-systemic mapping and accounting of material and energy exchanges associated with building, it turns out, is a robust basis for a parallel sociological and political description of building as embedded in *world-systems* that help articulate the social implications of planetary material-energy organization. This helps describe the *political constitution* of building. These flows of a construction ecology typically reflect processes of asymmetric and unequal modes of exchange that pose pointed political and social questions. Whereas architecture's politics are often interpreted in a symbolical realm of meaning and significance, the physical matrix of labor, extraction, and development pose very literal instantiations of architecture's politics that rarely enter architectural discourse but are inextricable from building. As such, *terrestrial architecture* necessarily involves methods and insights from ecology as much as political ecology, architectural history as much as social history, the tectonics of building construction and geology, human and nonhuman ecology. Terrestrial architecture is a single account of what all designed building actually is and does on the very thin crust of this planet.

I use the term "terrestrial" in order to focus our attention on the ways in which architecture organizes various processes near, at, and under the surface of the planet. This term captures aspects of both the ecological and social methods that are central to this book. My use of the term is an extension of the way that Bruno Latour develops it as a concept in his most recent book, *Down to Earth: Politics in the New Climate Regime*.[1] For Latour, "terrestrial" describes all the human and nonhuman, organic and inorganic, "natural" and "unnatural" dynamics of entities on the surface of the planet. "Terrestrial" cleverly navigates two constitutively modern practices that Latour previously identified in *We Have Never Been Modern*: one of "purification" that treats nature and society, human and nonhuman as distinct realms; and a second practice he identified as "translation" that produced hybrid networks of nature and society. "So long as we consider these two practices of translation and purification separately, we are truly modern."[2] The terrestrial toggles back and forth between these practices and thus moves away from the modern, resulting in what he calls the nonmodern. "As soon as we direct our attention simultaneously to the work of purification and the work of hybridization, we immediately stop being wholly modern, and our future starts to change. At the same time, we have to stop being modern, because we become more retrospectively aware that the two sets of practices have always been at work in the historical period that is ending. Our past begins to change."[3]

In this book, I aim at a terrestrial description of designed building—architecture—so that our understanding of the past can change, and so that the future of architecture can start to change as well. Moreover, I offer a terrestrial description of modern building and a particularly prominent icon of modern building: Seagram Building by architects Mies van der Rohe, Phillip Johnson and Kahn & Jacobs. To develop a nonmodern description of a modern building, I will necessarily toggle back and forth between methods that seemingly treat nature and society as analytically distinct so as to intently explore how nature and society mix *specifically through the procedures and processes of architecture*.

With the use of "terrestrial" in *Down to Earth*, Latour retreated somewhat from the hybridism of his métier—especially in the ways that his hybridism has been used to

endorse climate denials. Instead, Latour now advocates for "generating alternative descriptions" of the terrestrial stuff that constitutes the surface of the earth as a central intellectual and practical task today.[4] "How could we act politically," he pointedly asks, "without having inventoried, surveyed, measured, centimeter by centimeter, being by being, person by person, the stuff that makes up the Earth for us?"[5] The last two words of this quote about method—"for us"—reveals much about how Latour, typically associated with his earlier emphasis on "hybrid networks," ultimately maintains a necessary distinction between nature and society—"the Earth for us"—in his nonmodern thinking and explication of terrestrials. The space between "the Earth" and "for us" is loaded. Terrestrial refers to all the things, entities, and processes that mix on the surface of the planet; but to understand how things mix requires some analytical distinction amongst those things.

Recent debates have richly contested how we might best address the conflation of a consciously human process—like building—and the natural, bio-geophysical basis of that building. Some see flattened ontologies and find entangled hybrids everywhere they look—Jason Moore and to a large degree Bruno Latour himself, for instance. Others—such as Andreas Malm and Alf Hornborg—insist on maintaining an ontological and thus analytical distinction between nature and society, precisely so that we learn more about how they inevitably and indelibly mix. As Latour's earlier nonmodern thesis suggested, this is a modern debate. While these modern debates are compelling on their own terms, the more nonmodern act of terrestrial description has much more efficacy and purpose in the present moment.

To the degree that these thinkers agree that constitutive relations of nature and society or nature-society occur, there also seems to be tacit agreement that this interaction occurs on the surface of the planet. This surficial planetary datum, then, establishes the literal grounds of interaction, and likewise establishes the literal basis of *terrestrial architecture* as the concept is developed in this book. For our purposes here, it suffice to recognize that no one in these debates denies that human and nonhuman things relate and mix, and that their propensities impact one another on the common surface of this planet. But to the degree that these debates matter, we should be sufficiently

curious as nonmoderns to grasp not simply that humans and nonhumans mix, but moreover *how* they mix—in what degree and to what effect.

The study of terrestrial things and terrestrial activities—building, as chief among them—does not flatten out the respective ontologies of nature and society, but rather comes to relate them in highly specific ways as entities, systems, and processes in the terrestrial milieu they share and together continuously alter. To study terrestrials as subjects—to know how they come to mix and alter each other—we need first to know something of their propensities and tendencies of nature and society. As human geographer Andreas Malm notes, "the more problems of environmental degradation we confront, the more imperative it is to pick the unities apart at their poles. Far from abolishing it, ecological crises render the distinction between the social and the natural more essential than ever."[6] Embracing this need, I maintain an analytical distinction between nature and society as I study the Seagram Building. In turns, we will look at the eco-systemic basis of building through construction ecology, and then at the world-systems basis of building through its modes of unequal exchange. The aim of each task, though, is to better understand their respective affordances and propensities, all in order to understand how they mix and transform one another.

To be clear, the material and energy that constitutes a building—as eventually designed and specified by an architect—are "natural" things, at first. Kate Soper's definition of nature is important in this regard. She defines nature as "those material structures and processes that are independent of human activity (in the sense that they are not human-created products), and whose forces and causal powers are the necessary conditions of every human practice and determine the possible forms it can take."[7] The propensities and tendencies of these natural things and systems engender certain possibilities, including the very emergence of the humans that would come to indelibly alter planetary ecology. To understand terrestrials is, in part, to understand aspects of these "material structures and processes that are independent of human activity." As a composite of geology, thermodynamics, and ecology, amongst other physical sciences, construction ecology frames a view of such material structures and processes.

Try to consider for a moment all that mixes on our terrestrial surface. Excess energy radiates from the sun—which humans did not create—and strikes the planet—which humans did not create. That solar energy hits our atmosphere and illuminates it, warms it—a process which humans did not create but *have* altered for hundreds of thousands of years—which in turns drives temperature and air pressure differentials that we call weather and climate; or the atmospheric processes which humans did not create but do serve to amplify. Some of that incident solar energy gets grounded as insolation and warms soil and rock, or is absorbed into an impressive photosynthetic process which humans did not create and cannot even begin to approximate technically. Eventually, humans did create things and systems on the Earth and thereby entangled themselves with planetary flows of material and energy that they did not create but have altered. Arrowheads, fire, fossil-fuel capitalism, and the Seagram Building are examples of ways that humans have mixed with the surface of the planet. As Malm also observes, "only in a society that strives to turn every bit of nature into profit can the idea that nature has no independent existence take root."[8] Indeed, one motivation of a terrestrial description of architecture is to begin to value what capital does not value in architecture. To do that requires theories of value that acknowledge the contributions of the planet as well as the people on that planet that alter it at such scale and intensity as to merit careful study of their curious activities.

As an architect and builder of building in urban and rural contexts, and as a researcher of the ecological, social, and political implications of architecture, it is quite apparent to me that nature unequivocally exists and that it is entirely necessary to understand its propensities and tendencies that existed before, and will exist after, its entanglements with humans. Likewise, as a designer and builder in urban and rural contexts, it is also profoundly obvious to me that society, culture, and of course politics unequivocally exist and that it is entirely necessary to understand something of human propensities and tendencies in order to grasp how they entangle with nature in complex, highly recursive ways. Though we know that natural structures and processes will mix with human activity, and in so many cases both will be accordingly and indelibly altered, it is still necessary to acknowledge through an analytical distinction that nature exists and exhibits certain propensities.

The entire evolutionary history of the human type is at once immanent with the environments that hosted its evolution and is also invariably altered by that evolutionary process. In the course of evolutionary history, for better or worse, the human type developed its exosomatic field in ways that no other species has, and this organization of the human type and its environments has its own tendencies and propensities that must be understood. "The more profoundly humans have shaped nature over their history," Malm observes, "the more intensely nature comes to affect their lives."[9] To understand human entanglements with nature rather than flatten out their ontological differences, it is necessary to maintain an analytical distinction between nature and society. This affords insight into how things like people and rocks become entangled through architecture, and to what degree they are entangled.

Importantly, this insistence on an analytical distinction does not at all deny that nature and society routinely mix and often even collapse into one another. But it is simply not enough to declare that nature and society intermingle. For if these observations, debates, and claims about nature and society matter, then at some point we will want to know how nature and society mix and to what effect? For instance, we should feel obligated to know how much environmental load is displaced onto other parts of the planet, onto other people and other temporal horizons by a "net-zero energy/carbon" building in Cambridge, Massachusetts in the name of "sustainability"; a claim which is immediately obliterated by those displaced environmental loads under more careful ecological and social analysis. In a nonmodern, terrestrial description of building, understanding the specific hierarchies of bio-geophysical content of building only sharpens our understanding of the socio-economic and political constitution of putatively sustainable building. Accordingly, tracking the recursions of each type of ecological and social analysis through the other only serves to further sharpen their interaction in a structured way. So this analytical separation of nature and society, and their inevitable mixing, is central to my conception and description of terrestrial architecture.

Given the environmental, social, and political realities that confront us in this century, we need alternative descriptions of building and architecture as terrestrial activities.

To do this, however, requires that architects confront and transcend some conceptual and methodological considerations that have otherwise dominated, but ultimately limited, architectural descriptions in modernity. Toward the end of providing a nonmodern, terrestrial description of the Seagram Building—and challenging divided descriptions of architecture—I invoke and use this book's titular term—*Unless*—in two primary ways.

Unless[1]

(ŭn-lĕs'): to say what will or will not happen if something else does not happen

First, the word *unless* is used to directly acknowledge the contingencies of architecture. As in: *Architecture will not appear on this planet unless other things happen—a lot of other terrestrial things*. Modern descriptions of architecture too often take the literal appearance of a building in the world for granted, overlooking, for instance, the bio-geophysical processes that are the basis of all building-related energetic and materials flows; the planetary networks of extraction, production, and transportation that underlie all material and fuel dynamics associated with building; or the asymmetric human labor regimes without which building would not occur, nor would a building appear on a particular plot of land. Conceptually and methodologically, these terrestrial realities are commonly externalized by architectural discourse, pedagogy, and practice.

Likewise, architects have been trained to externalize the aftermath of building and the long list of effects that would not emerge unless a building was designed and specified the way it was: the maintenance or lack of maintenance required for the architecture to persist; the longer durée climate-changing carbon dynamics associated with the telluric engenderment and operation of the building; and a building's relative capacity to accommodate other uses and evolve as people and cities evolve. Such contingencies are routinely deemed external to architecture and thus methodologically occluded from its pedagogies and practices. The externalizations of architecture that have accumulated over the decades by now reflect a grave cognitive dilemma, one that is in

fact at the basis of our collective environmental, social, and political conundrums in this century as they relate to architecture. We have few ways—few cognitive means—to describe architecture as contingent upon terrestrial activity. As such, we now lack epistemic and methodological recourse to adequately account for all the terrestrial activities and impacts of building. This greatly limits the efficacy and resonance of architecture today.

Recognition of such externalizations—and making them more intrinsic to the discipline—could, however, alter the activity of architecture, design, and building. The process of externalization in modern architectural description is no longer viable. As Bruno Latour notes, speaking to Moderns, "the earth system reacts henceforth to your action in such a way that you no longer have a stable and indifferent framework in which to lodge your desires for modernization."[10] To be sure, the politically, ecologically, and climatically stable states that permitted generations of architects to indulge decades of delusions about the autonomy and autarky of architecture do not persist in this century. **Architecture has entered an age of fundamentally altered states and more contingent realities.** This condition requires a distinct epistemic substrate to architectural thought, pedagogy, and practice. Only parochial and retrograde murmurs echo from recidivist claims of autonomy and autarky in the present context.

The literal meaning of autonomy—determining one's own laws—seems especially less plausible, and far more politically and practically dangerous, in this century. Other laws are now necessary to conduct the social, economic, and material-energy flows that presuppose the constitution of building today. The reality is that the world grants very little autonomy or autarky to architecture. Talking to themselves about themselves and about their own "laws," the modern aberration of architectural autonomy and autarky was perhaps a necessary enabling fiction for the tenure and promotion of academic designers in retreat from the politics of the world, but these recidivisms are neither conceptually nor methodologically situated to address this century's environmental, social, and political conundrums.

Architecture does not produce objects, buildings. Rather, it designs, specifies, and contracts a vast array of terrestrial processes for which a building on a site is but the hardened, recursive edge of those contingent processes of building: a very large territory of material intake; bio-geophysical flows of energy; far-flung labor and social relations; industrial transformation and processing; ponderous transportation infrastructures; international modes of unequal ecological and economic exchanges; trade agreements; colonial regimes, etc. The list of dynamics linked directly to building—but externalized from architecture—is shockingly long. The theoretical and practical limitations self-imposed by these externalizations are dire. Should architects wish to address any of the central social, ecological, and thus political conditions of this century, this long list of externalizations must be made more intrinsic to architecture knowledge, teaching and practice.

Other more contingent concepts and methods are necessary, then, for a description of architecture than the inherited discourses of modern autonomous and autarkical architecture. In this regard, architects, might instead build on the thought of American pragmatist philosopher Richard Rorty and cultivate a greater sense of irony about building, so as to recognize the inextricably terrestrial contingencies involved with the appearance of architecture in this world.[11] To understand architecture today—and the environmental, social, and political degradations it produces or could otherwise ameliorate—is to make its externalities intrinsic and thus develop terrestrial descriptions of building and urbanization. Cultivating this irony about the contingencies of building through alternative descriptions will help architects achieve what Rorty described as solidarity with their world. The ecological and political solidarity with terrestrial dynamics that could inhere through building will not occur *unless* we begin to describe, teach, and practice building in new ways that better reflect the literal engenderment of architecture. At every turn, the architects of this century need to manifest the solidarity inherent in every terrestrial act of design and building. But to properly characterize the contingencies and enact the latent terrestrial solidarity of architecture, we also need recourse to another use of the word unless.

Unless[2]

(ŭn-): denoting the absence of a quality or state; not.

(lĕs'): constituting a more limited number or amount; of lower rank, degree, or importance

Consider its negating prefix: *un*-less. Architecture is anything but less; it is never minimal, never zero-anything. In this use of *un-less*, I at once mean less or minimal in the "formal" sense of the term (as in, for instance, the art-historical characterization of a building by Mies van der Rohe as "minimal" or his own aphorism that "less is more"). As we will come to see, less is never about less, nor achieves that end. Less in architecture is always *more* work, requires *more* resources, and moreover, less is always invoked to achieve a maximal effect.

I also mean to highlight the *less* proposition that underlies preposterous technocratic claims about "low-energy" or "net-zero energy" building and other misplaced moralities and methods that mischaracterize the energetics of architecture. Such moralities and methods chronically confuse doing less bad with doing good through design. The aim, as we will see, of engaging energetics in architecture is not a spreadsheet-enabled, zero-sum game of fuel or emissions neutrality. The opportunistically self-selected system boundaries of such claims ultimately reveal actually very little about the terrestrial energetics and activities of architecture. Further, such claims never achieve even their own stated ends, and worse, do so through sleight-of-hand environmental load displacements that enclose and degrade far-flung people and places. Indeed, contrary to its stated intentions, the pervasive preoccupation with the fuel efficiency of a building immediately and silently declares—through its compliant efficiencies—its allegiance to the geopolitics of fossil fuel capital and all the environmental and social externalizations that enable that system of production. It is not an evasion of that system, but a re-entrenchment of its core terms and operations. As conceived and practiced in architecture, the paradigm of "less energy" ultimately requires more energy, material, and labor resources—all of which are methodologically externalized to satisfy the conceit of "net-zero" claims. The methods and effects of architecture's decades-long preoccupation with the fuel

efficiency of buildings are fundamentally at odds with its perhaps well-intended environmental ambitions and aspirational politics.

In the past few decades both these formal and technocratic characterizations of minima in architecture have alternately suffered from delusions of autonomy on one hand, and autarky on the other. Claims about "form" in architecture have been largely transcendental in recent decades. This means that their genesis lies both before and beyond the material and energetic realities of the world. Likewise, the methods used in the formal analysis of architecture overtly deny the terrestrial processes and propensities that support the activity of building on this planet. By definition, claims on the autonomy of architecture are motivated by minimizing and narrowing the disciplinary purview of architecture. Such claims thus successively consider less and less of architecture as the basis of its discourse. In this way, "formal" claims on architecture are constitutively minimal in the scope of their activity and interest in the world, thus making such claims increasingly unambitious. Rather than knowing less and less about form, architecture today needs to know *more* about the formation of architecture through its terrestrial processes and activities. This is arguably a more ambitious formal project.

Similarly, technocratic and autarkical claims about "sustainability" in architecture have been largely teleological in recent decades, meaning that their concepts and methods treat the world as an infinite reserve of energy and material for human use. The methods used in various forms of environmental analysis in architecture—energy analysis and life-cycle analysis—do not account for the bio-geophysical processes that supply and support the activity of building on this planet. The work of nature is explicitly not accounted for in these methods. This leads directly to a broad range of environmental and epistemic degradations. That is, epistemic confusion about the difference between energy and fuel, recurrent basic scientific errors of system boundary definition, and inordinate optimization of un-strategic aspects of design have all obscured the terrestrial basis of building. This has occluded deeper descriptions of more structural, terrestrial processes that could be described as sustainable with much more validity.

In these errant formal and environmental descriptions of architecture, architects, historians, and theorists have routinely denied the contingencies of architecture, so as to enable both formal and technical fictions about architecture. In modernity, techniques of abstraction have been employed to engender these enabling fictions of autonomy and autarky. In these formal and technical ways, architects have abstracted building to the visual, spatial, material, and fuel basis of composed, performative objects. For much of the twentieth century, the abstractions of minimalism in both the formal and technical sense have been the focus of the discipline. Far too much terrestrial reality—the actual ecology, social relations, and politics of building—has been abstracted and externalized in the process.

In this regard, there is nothing more retro-garde than reliance on autonomy- and autarky-driven modes of abstraction in the composition of building today. Proponents of both autonomy and autarky remain enamored with abstraction as an enabling technique; less always entails more abstraction. As but one episode of an architect and theorist valorizing the modernist abstractions of the Seagram Building, in the reading of K. Michael Hays, its abstraction is offered as the source of potential resistance.

> American architectural culture is deeply locked into the structure of commodification, yet one effect of this is to release architecture into a certain autonomy. Its autonomy allows it to stand against the very social order with which it is complicitous, yet the same complicity racks architecture into an antagonistic position—combative, striving to produce effects that are of the systems yet against the system.[12]

Hays concludes that "by producing the abstract, architecture acquires a means to escape that same status, to refuse to become a mere thing among things."[13] Quite the opposite is true. It is precisely through avoiding and abstracting the facts of architecture's terrestrial engenderment that modern architecture, and its architects, became most readily sublimated and easily reified into commodifying dynamics. The Seagram Building is not abstract. Like any building, it is intensely literal. Only *readings* of the building can claim to be abstract. Any reading that privileges abstraction will tend, as Hays does, to abstract not only the architecture, but the building of the architecture

and all its environmental and political implications. Unfortunately, even at the putatively highest levels of thinking and description, the result of this fetishization of abstraction and autonomy, architects cannot articulate the architecture in the literal of terms. For instance, Hays routinely and erroneously describes either the Seagram Building's "I-section steel mullions" or "bronzed-steel mullions."[14] These components are in fact brass extrusions and thus have a distinct provenance and set of terrestrial processes attached to them. While I acknowledge that material specificity was not Hays' interest, given his claims and stated interest in how architects are or are not complicitous or sublimated in particular social orders of the modern era, like capitalism, the specificity and literalness of the Seagram Building ought to be of both theoretical and practical significance. If resistance to reification is the goal of (critical social) theory, then avoiding the production of architecture in decades of scholarship and pedagogy has only led to ever greater subsumption and reification of architecture. *It is precisely architecture's inability to describe itself that engenders its immense complicity with capital and other modes of sublimation.*

Modernist enthusiasms for abstraction prefigure both the formal and technocratic preoccupation with "less" in modern architecture. As Max Horkheimer and Theodor Adorno observed in their critique of "The Concept of Enlightenment" abstraction and disenchantment are at the very core of modernism,

> In the more general sense of progressive thought, the Enlightenment has always aimed at liberating men from fear and establishing their sovereignty. Yet the fully enlightened earth radiates disaster triumphant. The program of the enlightenment was the disenchantment of the world, the dissolution of myths and the substitution of knowledge for fancy. […] Abstraction, the tool of enlightenment, treats its objects as did fate, the notion of which it rejects: it liquidates them. […] In the face of such possibility, and in the service of the present age, enlightenment becomes wholesale deception of the masses.[15]

The enthusiasm for abstraction—so celebrated in formal and technical terms in modern architecture—evacuated building and its role in the world through disenchantments with both building and the world. Disaster radiated accordingly. The disenchantments of abstraction are no longer tenable in the storms of this century.

Re-enchanting the Literal

Against a century or more of enthusiasm for abstraction and its vicissitudes, to develop a terrestrial description of architecture is to develop the by-now radical act of literal description—an act of pursuing the details of the details of terrestrial architecture, we might say. A literal, terrestrial description of building at once re-attunes and re-enchants us to the world, after decades of epistemic rifts and obliviousness that accompany abstraction. At the same time, it much more cogently helps identify opportunities for real critical engagement and real ways to address the environmental, social, and political degradations that previous generations of architects, historians, and theorists have bequeathed to the current generation of architects. Rather than another generation of opportunistic claims on architecture's putative autonomy and autarky, the claim here is that architecture will only survive in something better than its present form and practices by radically engaging its most basic working procedures and disciplinary acts. A different genre and activity of architectural description is necessary in this century.

To study the terrestrial contingencies of architecture is to make architecture less abstract and more intrinsic to the world. With this book I aim to describe more about building—and more about a seemingly well-known building in particular—that we might otherwise assume to be sufficiently described in its extant literature. The formation of architecture, rather than instantiations of abstracted forms alone, becomes more apparent and important in this type of description. In doing so, this book collapses the seemingly disparate formal, environmental, social, and political concerns of architecture into one terrestrial concern through its framework

and methods. To directly describe the *unless* of a building's terrestrial systems of engenderment is to necessarily engage all these concerns as a single endeavor. This book thus inversely models how architects might start to design a building, less as an abstract object and more as a terrestrial process. Or better—armed with alternative concepts, methods, and motivations—architects might come to design the sublime recursivity and reciprocities that constitute a terrestrial architecture as an object and all its contingencies.

The literal and immense resources involved in building require a new interpretation today. Properly construed, immense resources could ultimately be deployed toward saner ecological and political outcomes. The immense material, labor, and energy required of any building ought to be comprehended and deployed with the aim of architecture *maximizing* its impact on the environment and society in positive and mutually-reinforcing ways. This is one of the central lessons of ecology and world-systems thinking for architecture. However, maximizing architecture's impact will remain epistemically and methodologically impossible if architecture is construed simply as composed, performative object. Building itself has been made too abstract and thereby important aspects of its ecological and political systems opportunistically externalized and its immense significance minimized. Again, the base error in recent decades has been to abstract an object from its constitutive processes of engenderment. This error, both cognitive and political, is at the core of inequality and environmental degradation that confront architects in this century. To address fundamental aspects of its political and environmental capacity, architects can no longer abstract architecture and building in the ways that are by now utterly routine, if not destructive and dangerous.

In short, both formal and technocratic conceptions of "less" in architecture suffer from their respective abstractions that need to be made more literal as genre of terrestrial activity. Together, both formal and technocratic conceptions have colluded in pedagogy and practice that obstruct deeper understandings of building and architecture. As such, these aesthetic and managerial abstractions are *violent abstractions* that engender not only epistemic damage but environmental damage as

well.[16] The fake debates among formalists and technocrats in architecture is no longer a tenable basis of pedagogy or practice.

I maintain that the project of architecture is constitutively formal, ecological, social, political, and historical, and that design ought to maximize the potential of these relations so as to best support and amplify terrestrial life. Attempts to abstract or narrow architecture into subfields, even if provisionally necessary along the way, tends now to obfuscate critical aspects about how these putative subfields operate, interact, and relate. While I admit the implausibility of a complete and totalizing terrestrial description of a building, given the environmental and political conundrums of this century, the prospect of *not* developing methods and concepts for terrestrial descriptions of architecture is even more implausible, politically irresponsible, and literally life-threatening.

Given the prevailing environmental, social, and political storms of this century—and the directly related abdications of architectural theory in recent decades—radically literal descriptions of architecture is now an ambitious architectural project. Describing the non-abstract terrestrial activity of architecture permits architects to finally address the ecological and political basis of architecture's formation as a central project of architecture. It is no less theoretically or formally ambitious. Arguably, deep descriptions of—and enchantment with—architecture's formation is far more ambitious as a theoretical and practical project than the purview of autonomy and autarky of recent architecture. A terrestrial description of building and architecture is not abstract, but literal; *based not on less, but unless.*

Unless-ing the Seagram Building

The presiding term "unless" helps us to expand our conception of building and its contingencies, which are always more, not less than how architects are trained to think and practice. The core theoretical and practical project of this book is to make intrinsic what architects have long externalized. This is not an attempt to somehow make

architecture more ecological, social, or political. Rather, the aim here is to recognize how deeply ecological, social, and political *every* building always and only is, despite the vain, excruciating attempts of architects to otherwise abstract and externalize these constitutive contingencies and realities. To do so—to use *unless* as a method—I will, again, discuss building at a range of spatial and temporal scales to help reveal the implications of building's material geographies, its processes of ecological unequal exchange, and the details of its terrestrial architecture; in short, how humans interact with and on the surface of the planet through architecture in manifold ways.

Returning to the first paragraph of this book, the procedure involved with this book is seemingly straightforward: describe the Seagram Building in New York City as a terrestrial entity. I could, perhaps, have picked any building to discuss the themes of this book, but unpublished documentation of the Seagram Building offers specific and compelling evidence of a seemingly well-known building as a terrestrial architecture. Further, selecting an important "trophy" building in a global capital of global capital further helps articulate the asymmetric social, economic, and ecological relationships that accompany building as terrestrial activity in a capitalist paradigm. The Seagram Building was, after all, the most expensive tower ever built at its time and was the paradigmatic model for endless imitators around the world.

Selecting a paragon of modern design helps explicate how the modern preoccupation with "less" and abstraction in architecture always bore with it a propensity for detachment and disenchantment that partially explains the tendency for the massive externalities of modern architecture. Consider, as but one example, how the modernist obsession with structure—the aspect of architecture that literally couples building through its foundations to the planet—was abstracted such that its great mass of bulk structural materials was not otherwise connected to the planet at the scale of building as an ecology. That is, the bulk materials that constitute a modernist steel and concrete structure were considered only for their gravity and wind loads, not their terrestrial loads on far-flung people, places, and carbon cycles. A bronze extrusion, likewise, has as many geophysical and world-systems properties as it does structural properties. A wood column is first a part of a forest, and then a forestry practice, before it becomes

a beam in a building. The respective environmental loads of those materials that the planet ultimately bears are just as important as the structural loads they might bear in a building. They are not external to building architecture and should not be abstracted the way they have in modern architecture.

Mies observed that "each material has its specific characteristics in which we must understand it if we want to use it. In other words, no design is possible until the materials with which you design are completely understood." Today our understanding of a material requires a more complete terrestrial understanding of that material—as a unit of a constructed world-system—not merely as a unit of construction. I see this as an extension of Mies' own view that technology, and its highest form in architecture, was "a world in itself."[17] A terrestrial description aims to more fully describe and know the world itself inherent to any material or technology, especially its highest form in architecture. I thus aim to describe the technics of world-systems and worldly ecosystems of the Seagram Building, as a specific "world unto itself." While some may discern a measure of autonomy in Mies' remark about technology, when I look at photographs of him at a brass factory or on construction sites I can discern his interest in the contingencies that make technology a specific world unto itself. I can discern immanence and contingency when I hear him state that no design is possible unless we completely understand the materials designed.

I am not alone in this interpretation of Mies' own laconic remarks and aphorisms. According to Detlef Mertins, Mies "distinguished his conception of art from the isolationism of the nineteenth-century discourse of the autonomy of art by relocating the aesthetic experience in the material world of capitalism."[18] Indeed throughout his work, Mies monumentalized the primary world-system material infrastructure of modern capitalism: the ubiquitous extruded steel section of railroads, factories and high-rises. Mies elevated the raw contingencies of modernist infrastructure to the level of architecture and monument. Elsewhere, Mertins captures some of the conundrums that the Seagram Building presents in this regard, "rather than negating its materialist base, the architecture of the Seagram Building was widely understood as elevating it. But, as a monument to commerce and technology, it could also be accused of

obscuring the problems of its economic base and its role in a system of exploitation."[19] My terrestrial description of the Seagram Building will explicitly expand on Mertins' observations about exploitation and appropriation in the production of the Seagram Building. As a modernist monument to abstraction, the building does obscure many of the materialist problems of its engenderment and takes them for granted, as do most descriptions of the building.

As William Jordy noted in his account of the Seagram Building, "if the build of the building continued as the controlling image in Mies' work, in his late office buildings especially the familiar image is rather taken for granted, and it is the technology of the building process more than the structure itself that tends to condition the design."[20] I could not agree more, but the controlling image of the work of architecture today is no longer just the build of the building, but rather needs to be the build of the world that builds the building. Given the prevailing environmental and social conditions that will increasingly frame life in the storms of this century, our understanding and description of terms like "structure," "technology," and "building process" must now extend beyond the lot line of a parcel in Manhattan, beyond ahistorical and apolitical characterizations of technology, and it must expand our description of what all is assembled through the terrestrial activities of design and building. In short, we need a new, and more radical, interpretation of what "the build of the building" is in our practices.

In this regard, this book is not really about the Seagram Building and it aims to neither vilify nor valorize the Seagram Building. Further, this book is not about the energy, materials, construction, design, history, sociology, politics *or* ecology of architecture. This book is about how such concerns always mix through design. The topic of the book, as well as any form of architectural villainy and valorization invoked and challenged by this book, is the chronically modern habits of mind in architecture that epistemically and methodologically abstract the terrestrial basis of architecture and all the ecological, social, and political entanglements that basis presupposes. As such, more than anything specific about Mies or the Seagram Building, this book challenges parochial architectural descriptions, most certainly claims about formal

autonomy and technical autarky. Instead, this book aims to describe how humans interacted with and on the thin crust of the planet to engender a canonical building. This particular building is celebrated in architecture discourse for its modern modes of abstraction, and its putative interest in refined tectonics. To describe this well-known building in terrestrial terms requires much more literal—that is, less abstract—descriptions of its tectonics. Though this building is very well documented as a seminal example of modern architecture, as an example of terrestrial architecture very little about it is well documented. Towards that end, I offer an alternative description of this building.

Architecture, a rather magnificent architecture like the Seagram Building, will not occur without its terrestrial processes. Nor will it be as magnificent as it could be without a recursive consideration of its terrestrial activity. An even more magnificent architecture can emerge when the bio-geophysical basis of building's engenderment and the labor basis of its production become central to our descriptions of building. An architecture that does so, finally, is methodologically—not merely rhetorically—prepared to address the environmental and social conditions of this century in an entirely new way. This requires contemplation, but perhaps less the brooding, cigar-filled air of disenchanted abstraction and more of an enchanted terrestrial optimism and gush of goodwill about what all architecture actually is, and could be, in this century.

Endnotes

1. Bruno Latour, *Down to Earth: Politics in the New Climatic Regime*, English ed., Cambridge, UK: Polity Press, 2018.
2. Bruno Latour, *We Have Never Been Modern.* Cambridge, MA: Harvard University Press, 1993, p. 11.
3. Ibid, p. 11.
4. Latour, *Down to Earth*, p. 94.
5. ibid, p. 94.
6. Andreas Malm, *The Progress of this Storm*, New York: Verso. 2018, p. 61
7. Kate Soper, *What Is Nature? Culture, Politics and the Non-Human*, Oxford: Blackwell, 1995, p. 151.
8. ibid, p. 217.
9. ibid, p. 76.
10. Latour, p. 84.
11. Richard Rorty, *Contingency, Irony, and Solidarity*, Cambridge, UK: Cambridge University Press, 1989.
12. K. Michael Hays, "Abstraction's Appearance: (Seagaram Building)" in Robert Somol, ed. *Autonomy and Ideology: Positioning an Avant-Garde in America.* New York: Monacelli Press, 1997, p. 278.
13. Hays, 290.
14. Hays refers to "The Seagram Building, its curtain wall of glass and steel," then "Seagram's famous I-section steel mullion," and "bronzed steel mullions" in the above citation. The same mischaracterizations are found in K. Michael Hays, "Odysseus and the Oarsmen, or, Mies's Abstraction Once Again," in Detlef Mertins, ed., *The Presence of Mies*, New York: Princeton Architectural Press, 1994.
15. Max Horkheimer and Theodor Adorno. "The Concept of Enlightenment," in Merchant, Carolyn ed. *Key Concepts in Theory: Ecology.* Jaipur: Rawat publications, 1996, p. 44–54.
16. Derek Sayer, *The Violence of Abstraction: The Analytic Foundations of Historical Materialism*, New York: Blackwell, 1987.
17. Ludwig Mies van der Rohe, "Technology and Architecture," in Ulrich Conrads, ed. 2002. *Programs and Manifestoes on 20th-Century Architecture.* Cambridge, MA, p. 154
18. This overtly and productively contradicts architectural commentators that use Mies as a paragon of abstraction. Detlef Mertins, "Mies's Skyscraper 'Project': Towards the Redemption of Technical Structure," in *The Presence of Mies.* New York: Princeton Architectural Press, 1994, p. 52.
19. Detlef Mertins, et al. *Mies.* London: Phaidon Press, 2014, p. 357.
20. William H. Jordy, *American Buildings and Their Architects: volume 4. The Impact of European Modernism in the Mid-Twentieth Century.* Norwell, MA: Anchor Press, 1976, p. 258.