Naturalizing Architecture—Beauty Becoming Beast

In "In the Nature of Cities" Neil Smith challenges the nature-society dualism and its many disguised manifestations that characterize the mainstream environmental movement. One of the manifestations that play into the ideological separation of nature and society is the apocalyptic response toward the environment:[1] Global warming! Resource depletion! production! Population increase! Water scarcity! Species extinction! We need to do something…; we need to respond and treat the environment "gently" and resourcefully…, otherwise the "beast" will strike back…!

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This leitmotif also structures most of the current discourse on sustainability. We often hear: How does architecture *respond* to an environment? Yet, we rarely hear: How does architecture *produce* an environment? In this last question lies the premise of this topic proposal: architecture "*becomes* the beast…;" it *becomes* an environment; it is *naturalized* into an environment. We can imagine and design new constellations and ecologies in architecture only if we cannot imagine environment except as minimally mediated by design and architecture.

How does architecture produce an environment? We could imagine, for example, an architectural environment in which the temperature differentials among the subjects' bodies, animal bodies, plants, earth, and a series of habitation spaces produce a particular "condensation" subject, and a thermal atmosphere that favors the gathering and conservation of water through condensation. Of course the elements in themselves, such as water, gravity, earth, and plants could be considered "natural"; yet they become *re-naturalized* and *socialized* into and through an architectural organization that *juxtaposes* and *frames* them into an exchange and productive system. We could shift in scale and imagine a *cloud* of condensation subjects, a *condensation community network* that produces a water cloud or a water economy that integrates different geological, biological, chemical, social, economic, and legislative processes and practices. A truly ecological architecture would be one that *interpolates* subjects and environments through the "calling" and organization of different objects, data, and material processes, from the scale of human skin and plant cells to building mechanical systems and larger material-data-scapes. It is within

the context of this *interpolation* where the often-dichotomous relationship between *architectural form* and *environment* ought to be situated.

What is the relationship between form and the signifying practice of architecture on one hand and environment or environmental performance on the other? This question is both historical and immediately present; it emerges at the very site of encounter between infrastructure and superstructure, between production and representation, between technological possibility, and our specific historical understanding of nature and environment. The paper attempts to go beyond the linear cause-and-effect paradigm and traditional questions of "which comes first" or "which gives rise to which." Instead, it suggests a framework that conflates both terms, in a volatile act of reversal and displacement, in which *form becomes performative and architecture becomes environment*.

This paper traces a brief foray of examples and precedents that mark important changes in our understanding of infrastructure, superstructure, and the relationship of architecture with environment and [what is perceived as] nature. It then explores these notions in a design project, The Condensation House, whose main environmental agenda is to produce and manage water in a variety of scales through the material and thermal process of condensation.

NATURALIZATION OF ARCHITECTURE

As built forms persist through time, a process of naturalization occurs. At first a new form seems to be an expression of the rational human mind exerting control over the natural landscape. For example, in the United States agrarian architectures of the nineteenth and early twentieth century first found expression as technological achievements of food production. Barns, silos, and fenced enclosures were buildings that constituted infrastructures of production: they, marked the landscape as places of controlled production. As time has passed, these structures have become the landscape. Age is certainly a factor, as decay and growth have merged natural, uncontrolled systems with human constructions. But perception is also at play. The barn and its surrounding fields have merged with the fallow land in between to define vast expanses of "natural" land. Especially when viewed in opposition to the modern city, agrarian architecture appears as part of the backdrop of nature.

The city itself has undergone this same evolution. If we compare the ruins of Rome to the modern city with which they are interspersed, these crumbling edifices define a sort of nature upon which the city has been built. Again, we may consider age and the merging of natural systems with the cultivated ruin, but also it is a matter of material and perception. The technologies and geometries of the classical city are still considered to define human rationality as opposed to the irrationality of nature. Yet, even if we were to view classical Rome perfectly preserved outside of the effects of time, these structures would appear unsophisticated to the modern eye. The human mind and technical capacity of 2,000 years ago seems closer to the natural world than to the modern technological world. This is the process of

naturalization. The efforts and ideas initiated by human endeavor gradually merge with the perception of nature. Nature here is conceived as a background against which human ideas of progress are measured.

Just as architectural forms are integrated with the perception of the natural landscape over time, so do technologies become integrated with our understanding of a natural social landscape. The telephone, for example, was once a novel and unique device that enabled communication across unfathomable distances. Gradually the telephone became a site for communication, a node within the landscape that people could visit in order to communicate: a natural oasis. Telephone poles and cables stretching across the landscape became almost as ubiquitous as trees. Then the telephone developed further into a mobile device, and now a multifunctional touchscreen. The telephone has changed our social reality, our perception of distance, and our experience of reality. Now we may interact with a handheld touchscreen at the same time as carrying on a face-to-face conversation, communicating in real time through text, voice, and consuming posted images and videos simultaneously. The technology has gradually transformed social interactions such that this experience of reality in a state of constant distraction and displacement is becoming natural.

Architectural forms, as they become integrated with natural systems, become technologies that alter, augment, or harness those systems. Returning to the agrarian form of the barn, we may understand this simple building as a technology for multiplying the productivity of the landscape. One prototypical New England barn form situates itself within the glacial undulations of the landscape. Built upon a berm that exaggerates the heave of the land, the barn allows ground-level access to two floors, creating an efficiency of area of enclosure to the storage capacity of devices ready to work the land. At one time these devices were horses and horse-drawn machinery that could walk out of two floors of the barn and disburse cultivating technologies across the surrounding fields. These devices later became steam-driven and then gasoline-driven machines, but the simple technology of the barn continued to perform its role efficiently. The barn harnesses the form of the land and exaggerates its potential, and over time becomes itself a feature of the land that it has indelibly altered.

INFRASTRUCTURE VERSUS SUPERSTRUCTURE

The greatest of all environmental powers is thought, and the usefulness of thought, the very reason for applying radical intelligence to our problems, is precisely that it dissolves what architecture has been made of to date: customary forms.[2]

The history of architecture is marked by displacements or redefinitions of what constitutes infrastructure and superstructure in architecture and their relations. From a "customary" standpoint the superstructure in architecture is considered to be the signifying practice, its effect, the *sign* of architecture as an "imprint" of the milieu in which it is situated, while infrastructure is what "supports" and "serves" superstructure. In modern architecture there is a distinction between infrastructure and superstructure.

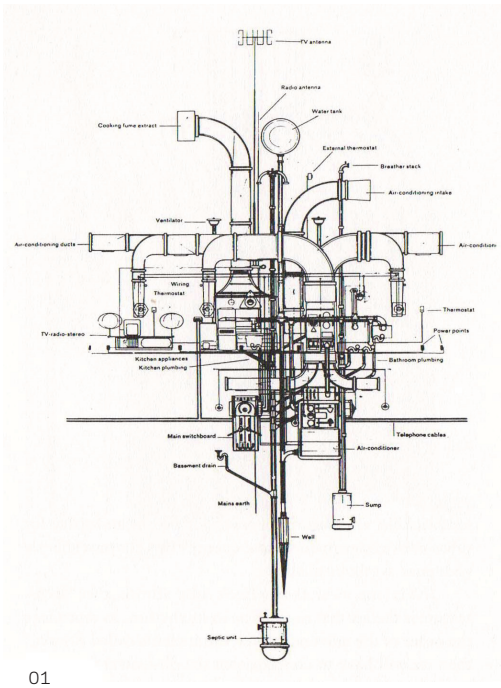

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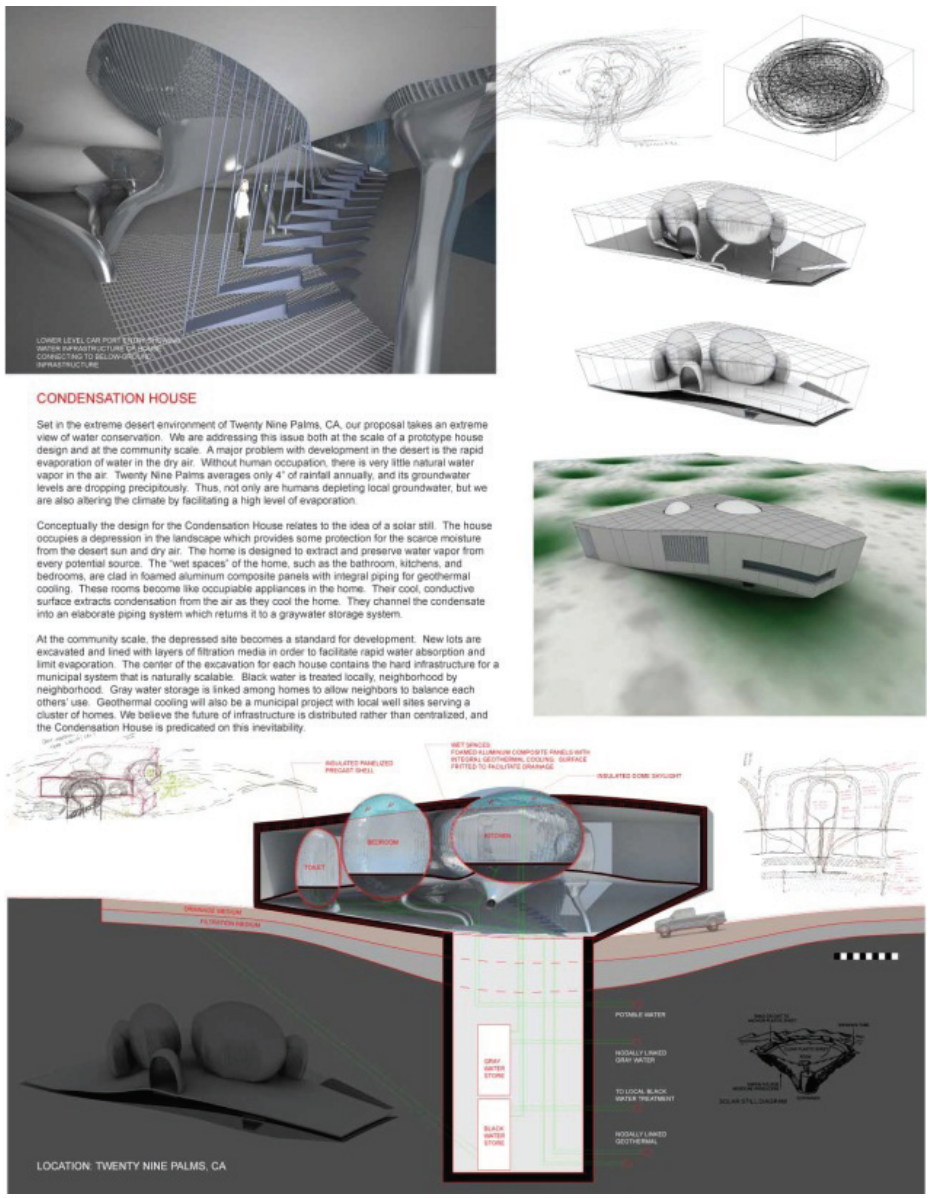
Figure 1: House reduced to installations, illustration by Francois Dallegret for an article by Reyner Banham. "Finally, architecture goes from having installations to being an installation; the building consists of the tubes and the intricate design of their networks. The space in between, though the formal justification of their existence, is of little visual or symbolic interest (Galiano, 2000)." [4]

For example, Loos is explicit in assigning the role of the superstructure to the skin: architecture is the interior skin or the carpet hung from the structure; the structure is important in so far as it serves as a support for the skin or its effect thereof; the "interior" skin becomes the archive of culture and expressivity, the "wrapper" of interior space as distinct from the exterior space of civilization. In Le Corbusier's work there is a more distinct conflation of infrastructure and superstructure. The infrastructure consists of modern technologies in general and reinforced concrete technology in particular that opens up the possibility for superstructure's effect: the "free play of forms in light," the free plan, and the free façade. Different from Loos, in Le Corbusier's work the infrastructure and superstructure are not separated. Infrastructural elements, such as concrete frame, lighting fixtures, and other industrial products are made visible and participate in the overall spatial effect. However, they are subsumed under the system of the purist composition. For example the pilotis, the pendant lights and chimneys are primarily organized and perceived as visual elements that punctuate the unfolding of purist space. It is precisely this formalization of technology and infrastructural elements that Banham critiques in his writings on technology and environment. For Banham power-operated infrastructures are active players in the production and perception of modern space.

In his seminal text *The Architecture of Well-Tempered Environment*, Reyner Banham re-reads and re-writes the history of modern architecture through the lens of modern power-operated technologies. He maps a displacement or shift that is latent in the deployment of thermal management technologies in architecture: the shift from the structural solution to power-operated solution; from the conservative and selective modes to the regenerative mode of thermal management. This implies a displacement of architecture's superstructure, that is, its signifying system by the technological development of building infrastructures (Figure 1). Banham observed that technological advances in power-operated solutions have liberated environmental performance from symbolic and customary form, by displacing it. While critical of reiterating the nineteenth-century project of cladding technology with form, Banham observed that, for architecture to remain current with advances in scientific and technological knowledge, it must not fix upon moments of technology and formalize them in ways that contradict technological thinking. It must respond dynamically to knowledge as it emerges and evolves. Unfortunately, Banham did not explain how to do this. Indeed, the last page of the second edition of *The Architecture of Well-tempered Environment* is marked by a pessimistic observation that contemporary architecture (of the time, around 1984) continues the nineteenth-century project of cladding technology with [customary] form, some sort of "exploitation" that is made possible by the separation of form from the desired environmental performance:

Our present post-Modernists who strive to restore those customary forms can do so only because environmental technology gives them the freedom to separate those forms from desired environmental performance. If this observation sounds somewhat like the comments made in the nineteenth century about those who hung irrelevant historical forms on buildings



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constructed out of new materials to serve new functions, then it is just that it should so sound; we see the same situation repeating itself but raised to a higher power by higher and more subtle technologies. And if this is a time when history repeats itself as farce, then it is architecture which is offering to become farcical, not the technologies that have displaced it from its ancient role. The position of these upstart technologies seems as secure as ever, in spite of the predictions of their disappearance along with fossil fuel, and the arts of making fit environments for human activities must now accept their claim to be a permanent part of the craft of architecture." [3]

Banham's account sadly delegates the architect to the role of the decorator, a supplier of forms and stylistic expressions that "exploit" and "parasitize"

Figure 2: Distribution of Condensation House across the landscape

on the power-operated environmental technologies. While critical of technology/form schism, Banham does not propose a synthesis (or a disjunctive synthesis) between the two, or a third term that could perform [as] a relation between the two. Perhaps it was structurally impossible for him to imagine a synthesis between form and environmental performance, writing as he was in the middle of the post-modern movement in architecture. Where are we today?

We pose the questions again: What is the relationship between the signifying practice of architecture and environmental performance today? What is the relationship between superstructure and infrastructure?

There is still a schism between the two terms, which is particularly expressed in the use and perception of technology as two different specters. These are historical specters best typified by the "House as a Machine for Living" problem: Does the "House as a Machine for Living" express technology and the machine aesthetically or does it perform technologically, like a machine? Today, on one side of the spectrum the practice of sustainability furnishes architecture with a series of technologies that consist of technological instruments, infrastructures, and processes. These technologies aim to make the building perform according to specific environmental metrics. The practice of sustainability implies that *form* or the *signifying practice* of architecture is the direct result of technological processes; superstructure is an "imprint" of infrastructure. On the other hand of the spectrum we witness technology as parametricism, as a technical self-determination where parametric form is post-rationalized and justified to respond to specific environmental metrics. It is hard today to find an architectural practice that is not "justified" or "cladded " with environmental statistics, techno-clothing, green roofs, and beautiful blue skies on one hand, and parametricism on the other. It is virtually impossible to categorize architecture today *as architecture* or *architectural culture*, without affiliating it with either sustainability or parametricism.

INHABITING THE GAP BETWEEN THE METRICS OF ENVIRONMENT AND PARAMETRICS OF FORM: CONDENSATION HOUSE

Sophistication is not necessarily the product of highly developed machinery, nor intensive capital investment. It is more a way of using available equipment and resources with cunning and intelligence.[5] We propose a step beyond Banham and current categorizations and think of architecture itself as a unique form of environmental technology, perhaps by inhabiting and capitalizing precisely on the gap, wasteland, or the "dead zone"[6] left open by the sustainability/parametricism polarity, indeed any zone left open by any polarity. Instead of simply instrumentalizing technology in architecture, we could think of architecture and architectural practice itself as a particular form of framing and juxtaposition; a practice that introduces a minimal frame that brings environmental components, processes, and technologies to a level of comprehension and subjective relevance. This frame is the signifying practice of architecture, its superstructure. It introduces spatial and temporal intervals in between infrastructures. These intervals are sites of labor, production, and exchange, in and during which volatile bodies and

boundaries are produced. The architectural object results as the delayed and poised figure of infrastructural juxtapositions.

The "Condensation House" project focuses precisely on the framing and juxtaposition of environmental processes and technologies, animate and inanimate processes. Architecture performs as a spatial and thermal differential that conditions the production of moisture and water through condensation. The architecture frames and engages both animate and inanimate objects and processes, whose temperature differences have the potential to produce condensation, such as human bodies, plants, and geothermal energy.

Set in the extreme desert environment of Twentynine Palms, CA, this proposal takes an extreme view of water conservation. We are addressing this issue both at the scale of a prototype house design and at the community scale. A major problem with development in the desert is the rapid evaporation of water in the dry air. Without human occupation, there is very little natural water vapor in the air. Twentynine Palms averages only 4" of rainfall annually and its groundwater levels are dropping precipitously. Thus, not only are humans depleting local groundwater, but we are also altering the climate by facilitating a high level of evaporation.

Conceptually the design for the Condensation House relates to the idea of a solar still. The house occupies a depression in the landscape that provides some protection for the scarce moisture from the desert sun and dry air. The home is designed to extract and preserve water vapor from every potential source. The "wet spaces" of the home, such as the bathroom, kitchens, and bedrooms, are clad in foamed aluminum composite panels with integral piping for geothermal cooling. These rooms become like occupiable appliances in the home. Their cool, conductive surface extracts condensation from the air as they cool the home. They channel the condensate into an elaborate piping system, which returns it to a gray-water storage system.

At the community scale, the depressed site becomes a standard for development. New lots are excavated and lined with layers of filtration media in order to facilitate rapid water absorption and limit evaporation. The center of the excavation for each house contains the hard infrastructure for a municipal system that is naturally scalable. Black water is treated locally, neighborhood by neighborhood. Gray-water storage is linked among homes to allow neighbors to balance each other's use. Geothermal cooling will also be a municipal project with local well sites serving a cluster of homes. We believe the future of infrastructure is distributed rather than centralized, and the Condensation House is predicated on this inevitability (Figures 2 and 3).

The house conflates disparate concepts, natures, and infrastructures: water that is usually considered an atmospheric element and supposed to be kept outside the house, is brought into the interior of the condensation house; the rooms of the house that usually contain the appliances of the home, become the appliances themselves; the vestibule that "locks" the living space from the outside both spatially and thermally, becomes the living space itself, which mediates between exterior and the thermally tempered rooms/appliances. The monstrous heat of the dessert that dries every bit

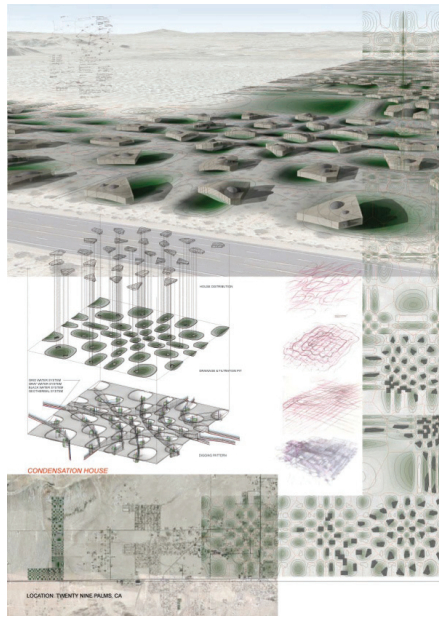

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Figure 2: Distribution of Condensation House across the landscape

of moisture and water away is architecturally framed in such a way that it becomes the very reason and logic of moisture and water production.

CONCLUSION

While this architecture embraces the notion that all nature is constructed, it turns this concept on its head. It does not simply frame and juxtapose nature, but rather produces the very site of nature's production and its concept thereof. Architecture-as-frame opens up the possibility of superstructural effects or imaginaries to emerge and unfold at the very site of the production of space and nature, at the site of encounter of technological, social, and cultural processes. The superstructural effect or the aesthetic dimension of this architecture is not so much the result or extension of superego, but rather the result of disparate juxtapositions and conflations of technological, natural, and cultural *readymades*. Shrouded in a vague mist of condensed water, the domestic body is wrapped with a layer of geothermal topography that silently, yet persistently furnishes and connects with the social body. The domestic body becomes social. This is not only an optical body but also a dermic and thermal one: It emerges in between the eye and the skin. The spatial and thermal production of this body participates in a social process of exchange, conversion, and volatile entropic production. ◆

ENDNOTES

1. Neil Smith, in the Foreword of *In the Nature of Cities: Urban Political Ecology and the politics of Urban Metabolism*. Edited by Nik Heynen, Maria Kaika, and Erik Swyngedouw. London: Routledge, 2006, p. 3.
2. Reyner Banham, *The Architecture of the Well-Tempered Environment*. University of Chicago Press, Second Edition, 1984, p. 312.
3. Reyner Banham, *The Architecture of the Well-Tempered Environment*· University of Chicago Press, Second Edition, 1984, p. 312.
4. Luis Fernandez-Galiano, Fire and Memory: On Architecture and E*nergy*· MIT Press, Cambridge, 2000, p. 248.
5. Reyner Banham, *The Architecture of the Well-Tempered Environment*· University of Chicago Press, Second Edition, 1984, p. 302.
6. Mark Jarzombek, Eco-Pop: In Praise of Irony, Hyperbole, and Readymades, in *The Cornell Journal of Architecture*, Volume 8, 2010.